IDG.net

CIO

THE MAGAZINE FOR INFORMATION EXECUTIVES

FIRST OF TWO SECTIONS

MARCH 15, 1998

EIGHT DOLLARS

BELGIUM	BF240
FRANCE	FR40
GERMANY	DM12
ITALY	L13,000
JAPAN	¥780
NETHERLANDS	G13
SPAIN	P1000
SWITZERLAND	SFR10
UNITED KINGDOM	£5

Call for Entries

1999

CIO MAGAZINE

HONORING BUSINESS ACHIEVEMENT

ENTERPRISE

THROUGH THE INNOVATIVE USE OF

VALUE

INFORMATION TECHNOLOGY

AWARDS

Application Follows Page 72, Section 2

Presented By	Proudly Sponsored By
CIO CIO Communications, Inc.	AT&T AT&T Solutions

HONOR
RECOGNITION
PRESTIGE

THE SEVENTH ANNUAL

CIO MAGAZINE ENTERPRISE VALUE AWARDS

The pressure among IT executives to prove the value of IT has never been greater. Top management closely scrutinizes the bottom line to determine whether IT is providing a profitable return on investment. This trend has motivated many IT executives to develop methods for measuring both the hard and soft benefits derived from information technology.

In response to this search for technology's ROI, the editors of *CIO* magazine created the Enterprise Value Awards. By honoring the strategists who have implemented innovative, value-rich IT solutions, we at *CIO* hope to inspire others in their search for enterprise value. This year we are proud to announce that AT&T Solutions is underwriting the awards program, as they too recognize the need to honor strategically crafted IT solutions.

DO YOU QUALIFY FOR AN ENTERPRISE VALUE AWARD?

Four criteria are essential:

1. **Strategic Impact**
2. **Customer Impact**
3. **Financial Impact**
4. **Technical Excellence**

WHAT EXACTLY DO WE MEAN BY VALUE?

In most boardrooms, value is synonymous with return on investment. And while ROI will certainly be a key factor in determining CIO Enterprise Value Award recipients, here at *CIO* the definition of value goes even further to include systems that enable

- Innovative, productive ways of doing business
- Revamped organizational structures and styles
- New market entry or penetration
- Global expansion
- Transformation of the terms of competition within the marketplace
- Improved relationships with customers
- Enhanced relationships with employees or functions
- Leaner and more economical operations

Get the recognition your organization deserves. If you've developed a technology solution that fits the CIO Enterprise Value Award profile, we urge you to complete the application form bound in this issue, following Page 72. All applications are due June 15, 1998.

The February 1, 1999, issue of *CIO* will feature profiles of the winning organizations and the executives who have proven the positive and sustained impact of technology on the enterprise.

In February 1999, *CIO* and AT&T Solutions will host a ceremony honoring the Enterprise Value Award winners at the annual CIO Enterprise Value Retreat.

IDG .net

CIO

THE MAGAZINE FOR INFORMATION EXECUTIVES

FIRST OF TWO SECTIONS

MARCH 15, 1998

EIGHT DOLLARS

BELGIUM BF240
FRANCE FR40
GERMANY DM12
ITALY L13,000
JAPAN ¥780
NETHERLANDS G13
SPAIN P1000
SWITZERLAND SFR10
UNITED KINGDOM £5

Is Time Running Out for the Network Computer?

PAGE 34

Guide to Telecom Services PAGE 54

Why You Need A Succession Plan PAGE 28

ALSO INSIDE

The Secrets of the CIA

How the Pros Make Sense of Unstructured Data PAGE 46

John Canavan, vice president of IS at Chevron Federal Credit Union, won't commit until standards emerge

WHAT HELPED MAKE DELL THE #2 SUPPLIER OF PCs TO U.S. BUSINESSES?

Eight of your countrymen. 217 miles above the earth. Moving 25,000 feet per second. For NASA, reliability in all systems up and down the line is critical. That's why every system Dell builds for NASA is built to their specifications. Every single one is tested and validated, using industry standard components that are also intensely tested. The software is preloaded at the factory so the system is built just once, thus helping to ensure reliability and network compatibility around the globe. And the stratosphere.

MMX™ intel inside pentium® II PROCESSOR

Dell® OptiPlex®

MISSION-CRITICAL CONNECTIVITY.

That, and the fact NASA, like any large organization, has direct contact with Dell. Dell can react and adapt to whatever you need. This responsiveness has helped Dell become the #2 supplier of PCs to U.S. businesses, according to latest IDC results.‡

So let us ask you a question.

What can we build for your company? Call us at 1-800-947-8316, or visit us at www.dell.com.

DELL®
www.dell.com

‡IDC Quarterly PC Market Tracker, Q397, shipments to U.S. businesses. Future results may vary. The Intel Inside logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. Not all products in the DptiPlex line contain the Pentium II processor. Dell, the Dell logo, and OptiPlex are registered trademarks of Dell Computer Corporation. ©1998 Dell Computer Corporation. All rights reserved.

CIO

VOL. 11 • NO. 11 • MARCH 15, 1998 • 146 PAGES IN 2 SECTIONS
SECTION 1

Features

34 **NC or Not NC?**

COVER STORY: NETWORK MANAGEMENT That may be the question, but fence straddling is the strategy of choice when opinions are abundant and facts are few and far between.

By Mindy Blodgett

46 **License to Know**

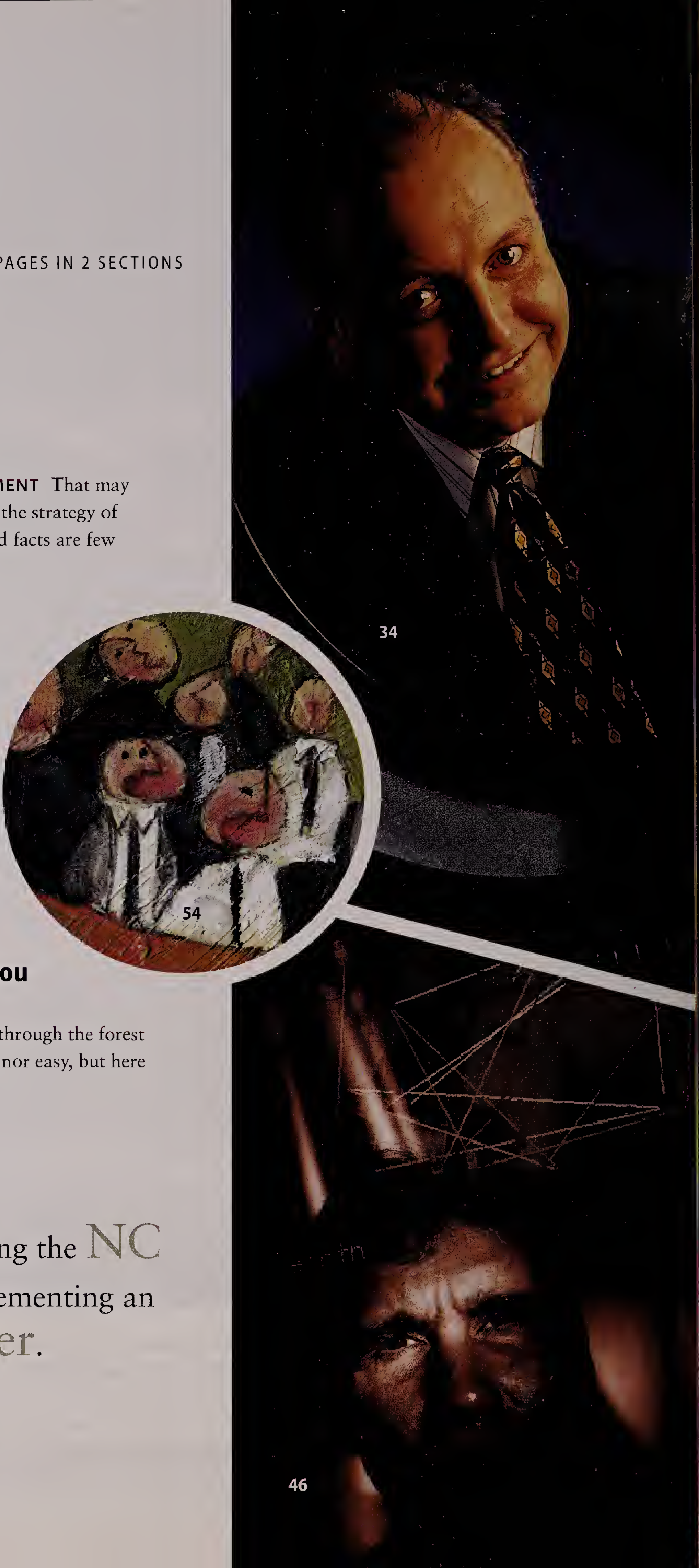
COMPETITIVE INTELLIGENCE An Aston Martin DB5 and a Walther PPK might have been the tools of choice for Bond—James Bond—but today's intelligence agent can teach a corporate counterpart to be more effective with a database and a search engine.

By Jay Finegan

54 **Come here, Watson, I need you more than ever!**

TELECOM PROCUREMENT The road through the forest of telecom providers is neither straight nor easy, but here is the map to the best deal.

By Cynthia Bournellis



ON THE COVER:

John Canavan is assessing the NC market before implementing an NC-based call center.

Cover photo by Kent Hanson

Objects *r* Here.

The future belongs to objects.

Jasmine™ is the future of objects.

It's the first complete and pure object solution.

It's not a hybrid. It's not hype.

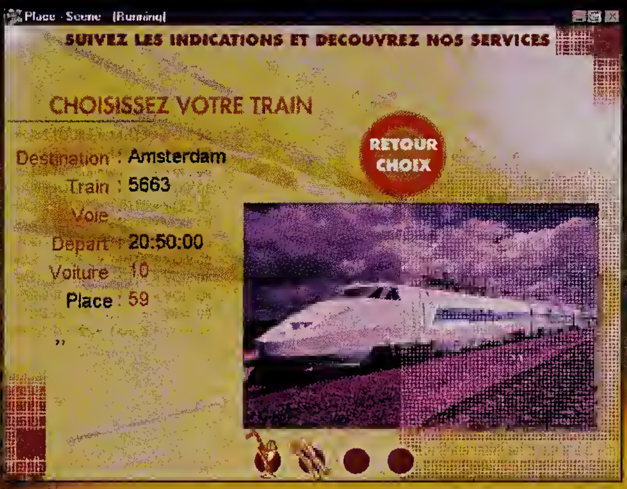
Jasmine is real. A proven, complete object-oriented database and development environment. So now you can build the next generation of multimedia business applications and run them everywhere: client/server, Internet, intranet, and extranet.

Introducing The Industry's First Multimedia, Internet-Enabled Object Database.

With built-in multimedia and Internet support, Jasmine has it all. A pure, object-oriented database. Drag-and-drop development environment. Distributed object delivery. Efficient database multimedia storage and manipulation, and efficient delivery through streaming and caching. The industry's easiest development environment lets you use all your favorite tools: built-in VB integration, native Java support, and C++ support.

Unlike hybrid or partial object solutions, Jasmine actually works.

So you can shorten your time to market and gain a distinct competitive advantage.



CHOISISSEZ VOTRE TRAIN

Destination : Amsterdam
Train : 5663
Voie
Depart : 20:50:00
Voiture : 10
Place : 59

If that sounds good, pick up the phone right now. Because Jasmine is ready today.

Are you?

Call 1-888-7JASMINE for your FREE Developer Edition CD or visit www.cai.com

COMPUTER® ASSOCIATES
Software superior by design

Introducing Jasmine™

Objects @ Work™

©1998 Computer [illegible]
All other product names [illegible] respective com[illegible]

Ia

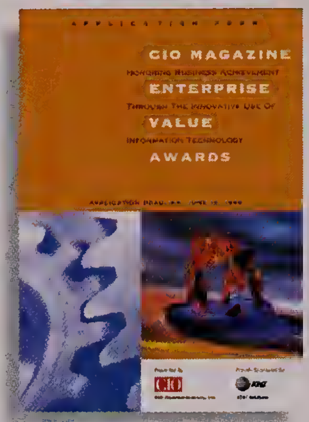
UNIX® systems lie at the heart of your data center. And HP's UNIX solutions offer the best combination of performance, reliability and support to power your

UNIX is a registered trademark of The Open Group in the U.S. and other countries. ©1998 Hewlett-Packard Company.

FRANCE 98
WORLD CUP
OFFICIAL SUPPLIER

mission-critical applications. So you can make the necessary decisions to move your business forward. All without missing a beat. For more info: www.hp.com/go/unix.

HEWLETT®
PACKARD



Enterprise Value Awards application follows Page 72 of Section 2.

Columns

28 **Heir Supply**

EXECUTIVE COUNSEL Establish a line of succession for vital IT positions before the need arises.
By Matt Villano

62 **Mergers, Acquisitions and Saving IT Dollars**

FORRESTER VIEW When your company announces it is about to join another, whether the new terrain will be filled with opportunities or land mines depends on the principles you establish. *By Bob Chatham*

66 **Can You Be Trusted?**

EMERGING TECHNOLOGY Visitors to your Web site will expect you to adhere to these future privacy standards.
By Jennifer Bresnahan

Indexing images • Savvy support • Virtual backup • Tracking assets

72 **OppenheimerFunds' Client/Server-Based Security Application**

WORKING SMART With a new security system in place, this mutual fund firm aims to increase its asset management portfolio to $100 billion or more. *By David Pearson*

In Every Issue

10 **In Box**

Letter from the editor and how to reach us

14 **Publisher's Note**

16 **Trendlines**

Secondhand Woes • All A-Bored? Not on This Train • Off the Shelf • Share the Wealth • CIOs to the Rescue • It Was a Dark and Stormy Night • But Can They Get Extra Credit?

70 **Index**

16

CIO enterprise
Maestros
EXECUTIVE SPONSORSHIP Who Holds The Keys To IT Project Success?

Inside Section 2

COVER STORY: EXECUTIVE SPONSORSHIP Business executives have as much to do with a technology project's success or failure as the CIO.

MARKETING Technology can help global companies maintain one of their most important assets—their brand name.

SALES-FORCE AUTOMATION You can build sales reps' enthusiasm for sales-force automation if you convince them that the system makes their jobs easier.

EXPLOITING CUSTOMER INFORMATION Some enterprises are making aggressive hygiene a new source of competitive advantage.

HANDSHAKE Fasten your seat belts: General Motors is launching online services that may change the way people buy cars.

REALITY BYTES Enterprise systems management has potential, but it's still a headache.

LEARNING CURVE Extranets allow transactional business-to-business activities and can save your company time and money.

IDG
INTERNATIONAL DATA GROUP

Board Chairman PATRICK J. MCGOVERN
President KELLY CONLIN
Chief Operating Officer JAMES CASELLA

NETWORK COMPUTING

©1998 Oracle Corporation. All rights reserved. Oracle and Enabling the Information Age are registered trademarks of Oracle Corporation.

Are inefficiency and out-of-control computing costs sinking your company's budget? According to market research firm IDC, the total cost of ownership of a PC is as much as $14,000 or more per year. And lower PC prices don't help much, because most of that cost is in the labor needed to upgrade PC software, back up desktop data, and everything else necessary to keep PCs running. But there's a way to eliminate most of that labor, and make your PC network much more reliable, all at the same time. Simply add the Oracle application and database server software to your network. You'll never upgrade another desktop application package again. And you'll never back up another PC hard drive either. Because all of your software and data are safely stored on a few professionally managed network servers. That's why it's called network computing. Let us show you how it can lower your overall computing costs by at least 39%, across the board.

Find out more. Visit ***nc.oracle.com*** *or call* ***1-800-633-0821, ext. 12370.***

ORACLE®

Enabling the Information Age®

NETWORK COMPUTING

Some network solutions are better than others.

Like the no-brainer, software-loaded, right-out-of-the-box, plug-it-in type.

When trying to keep a business up and running, finding the right solution can be the toughest job of all. Which is why Gateway 2000 Major Accounts, Inc. offers Custom Integration Services (CIS) to qualifying, large-volume purchasers. We'll work with you, and together, find the best custom solution for your business. Through this program, a wide range of hardware and software solutions can be built into your PCs. Including some products we don't normally sell.

Our CIS program increases your Value of Ownership by saving you the time and expense of breaking the box. Items like pre-loaded special applications and training software improve efficiency. For example, suppose your business uses a specific inventory control program or a certain type of backup storage device. We'll help you get that hardware or software built into your new GATEWAY™ systems, pre-test it to your specifications and ship it to your door. No third party installations. Just you and the plug.

With Gateway systems, you get high quality, fresh technology, stable platforms and manageability features. And with CIS, you also get the added benefit of having it all your way. This unique Gateway combination maximizes your Value of Ownership with increased benefits and reduced costs for the life cycle of your computers.

So call your Major Accounts sales representative or visit our Web site today. Together, we'll find a solution that's right for you.

MMX™
intel inside®
pentium® II PROCESSOR

NS-7000 300 Workgroup Class Server ▪ Intel® 300MHz Pentium® II Processor with 512K Cache (expandable to two processors) ▪ Error-Checking and Correcting Memory Subsystem with 64MB RAM ▪ Several RAID Upgrades Available ▪ 4GB Ultra Wide SCSI Hard Drive ▪ 12X SCSI CD-ROM Drive and 3.5" Diskette Drive ▪ 3Com® 10/100 Ethernet Adapter ▪ Seven-Bay Server Tower Case ▪ 300-Watt Power Supply ▪ 104+ Keyboard & Microsoft® IntelliMouse™ ▪ InforManager™ Server Management System with ActiveCPR™ Processor Protection **$2729** Business Lease †$96/mo.

E-3110 300 High Performance Network-Ready Desktop ▪ Intel 300MHz Pentium II Processor with 512K L2 Cache ▪ 64MB SDRAM ▪ EV700 .28 Screen Pitch 17" Monitor (15.9" viewable) ▪ AccelGraphics™ Permedia® 2 32-Bit AGP with 8MB SGRAM ▪ 8.4GB Ultra ATA Hard Drive ▪ 13/32X CD-ROM Drive and 3.5" Diskette Drive ▪ 3Com 10/100 Ethernet Adapter ▪ E-Series Mid-Tower Case ▪ 104+ Keyboard and MS® IntelliMouse ▪ MS Windows® 95 ▪ (DMI) 2.0 Compliant ▪ Intel LANDesk® Client Manager 3.1 ▪ Gateway Gold℠ Service and Support for E-Series PCs **$2349** Business Lease †$83/mo.

E-5000 300 Technical Workstation ▪ Intel 300MHz Pentium II Processor (expandable to two processors) ▪ 128MB ECC SDRAM ▪ Hitachi® 19" Monitor (18" viewable) ▪ 8MB Accel Graphics Permedia 2 AGP Graphics Card ▪ Seagate® 9GB 10,000 RPM Ultra Wide SCSI Hard Drive ▪ 13/32X SCSI CD-ROM Drive and 3.5" Diskette Drive ▪ SMC® 10/100 Network Card ▪ E-Series Workstation Tower Case ▪ 104+ Keyboard & MS IntelliMouse ▪ Intel LANDesk Client Manager 3.1 ▪ MS Windows NT® 4.0 **$4099** Business Lease †$143/mo. CDRS-03 **32.42**

GATEWAY™ Solo™ 9100 Portable ▪ 14.1" XGA TFT Color Display (1024 x 768 resolution) ▪ Intel Pentium Processor with MMX™ Technology via Intel's Mobile Module (I.M.M.) ▪ SDRAM Expandable to 192MB ▪ 512K Cache ▪ 4MB EDO Video RAM (1280 x 1024 external) ▪ Up to 5GB Hard Drive ▪ Removable Combo 8X min/20X max CD-ROM & 3.5" Diskette Drives ▪ Premium Sound System w/16-Bit Wavetable Sound & Altec Lansing® Stereo Speakers ▪ 12-Cell Lithium Ion Battery & AC Pack ▪ Full 88-Key MS Windows 95 Keyboard ▪ Carrying Case ▪ NTSC/PAL Video Input & Output ▪ USB Ports & Zoomed Video ▪ 15-Pin MIDI/Game Port ▪ MS Windows 95 or MS Windows NT 4.0 ▪ MS Works 95 or MS Office 97, Small Business Edition plus Bookshelf® 96 ▪ LapLink® for Windows 95 & McAfee® VirusScan ▪ Gateway Gold Service and Support for Portable PCs **Prices starting at $3199** (Qty. 1) Business Lease †$112/mo.

GATEWAY2000®

"YOU'VE GOT A FRIEND IN THE BUSINESS"®

CALL 1-888-888-0260 www.gateway.com

Gateway 2000 Major Accounts, Inc.

©1998 Gateway 2000, Inc. All rights reserved. The Intel Inside Logo, Intel, LANDesk and Pentium are registered trademarks, and MMX is a trademark of Intel Corporation. Not all Gateway E-Series PCs and NS-Series Servers contain the Pentium II processor. The Gateway Solo PC does not contain the Pentium II processor. All brands and product names are trademarks or registered trademarks of their respective companies. Many Gateway products are custom engineered to Gateway specifications, which may vary from the retail versions of the software and/or hardware in functionality, performance, or compatibility. All prices and configurations are subject to change without notice or obligation. Prices do not include shipping, handling and any applicable taxes. Gateway 2000 Major Accounts, Inc. is a wholly owned subsidiary of Gateway 2000, Inc. †Leasing arranged by independent leasing companies to qualified commercial customers. Lease payments based on 36-month term. Lease terms subject to change without notice or obligation.

In Box

LETTER FROM THE EDITOR AND HOW TO REACH US

U.S. spending on IT hardware reached an almost inconceivable $220 billion last year, according to some industry analysts. Add in software, networking and all the rest, and the number triples. Business people and CIOs alike are reeling under the seemingly endless outpouring of money into information technology.

One outcome of the IT feeding frenzy is a growing interest in getting things under control. A lot of energy is being focused on enterprise architecture, standardization, global infrastructure and asset management. But these big words often carry equally hefty price tags.

It's difficult enough to cost-justify applications; understanding the value of multimillion-dollar infrastructures is practically a black art. CIOs who understand the importance of getting their arms around their companies' IT assets are seeking to place tangible, hard-dollar value on infrastructure initiatives so that they can sell them to the rest of the organization. But convincing business executives to spend that money instead of making other investments is tough. CEOs want to know what they're going to "get" for this (to them) outrageous investment. If you can't answer that question, you're fighting a losing battle.

In upcoming issues, *CIO* will profile organizations that have attempted to plan, sell and build an enterprise architecture or global infrastructure. You can help. If you are or have been involved in such an undertaking, we'd love to hear about it. On this issue as much as any, it's experience-based learning that will be most useful to you and your peers.

Abbie Lundberg

lundberg@cio.com

How to Reach Us

E-mail: *letters@cio.com*

Phone: 508 872-0080

Fax: 508 879-7784

Address: CIO Communications Inc.,
492 Old Connecticut Path, P.O. Box 9208,
Framingham, MA 01701-9208

Web Site: *www.cio.com*

Subscriber Services: 800 788-4605;
Fax: 508 879-7899;
E-mail: *denisep@cio.com*

Reprints: Reprints are available by calling 508 935-4539.

Letters may be edited for length or clarity.

PHOTO BY WEBB CHAPPELL

© CIO Communications, Inc.

President, CEO and Group Publisher Joseph L. Levy
Publisher Gary J. Beach
Editorial Director Lew McCreary

EDITORIAL

Editor in Chief Abbie Lundberg
Executive Editor Richard Pastore
Managing Editor Anne Stuart
Senior Editors Howard Baldwin (West Coast), Alice Dragoon, Carol Hildebrand, Art Jahnke, Christopher Koch
Features Editors Katherine Auer, Elaine M. Cummings, Todd Datz, Perry Glasser, Megan Santosus (Web & Print), Sara Shay
Copy Chief Cheryl R. Asselin
Copy Editors Meg Mitchell, Sheila Neylon, Thomas G. Wailgum
Senior Writers Gary Abramson, Mindy Blodgett, Jennifer Bresnahan (Web & Print), Peter Fabris, Tom Field, Sari Kalin, David Pearson, Derek Slater
Staff Writer Alex Frankel (West Coast)
Editorial Researcher Carol Zarrow
Editorial Assistants Ruth Greenberg, Lynne Zouranjian
Editorial Operations Manager Lisa Jayne Kerber
Administrative Assistant LaTanya Arnold
Contributing Writers Cynthia Bournellis, Bob Chatham, Jay Finegan, Matt Villano

DESIGN

Group Director, Art and Design Mary Lester
Art Director Lisa Munroe
Associate Art Director Michael Siggins
Sr. Graphic Designers Hana Barker, Linda Golon, Steve Traynor
Graphic Designers Terri Haas, Terri Mitchell
Associate Graphic Designer Robin M. Belliveau

WEB SITE

VP / Technology and Webmaster Tim Horgan
Web Editor Stephen L. Singer
Web Developers Dagmar Eiben, Lee Weiner
Web Intern Kathleen Kotwica

CIRCULATION

VP/ Circulation Carol A. Spach
Circulation Manager Susan Woodworth
Subscription Svcs. Manager Denise Perreault
Circulation Coordinator Tina Pescaro

PRODUCTION

VP/ Production Lori Beth Sadewitz
Senior Production Manager Resa Altsher
Ad Traffic Coordinator Lee Tuttle

EXECUTIVE PROGRAMS

Senior VP/ Exec. Programs Lynda Rosenthal
Director, Program Planning Susan T. Montgomery
Director, Program Development Robin L. Azar
Assistant Program Manager Thomas M. Pitkin
Manager, Program Operations Cynthia Laird
Mgr., Program Mktg. Comm. Sara A. Evangelous
Technical Admin. Specialist Liz Hecht
Program Mktg. Coordinator Jeremy E. Draper
Administrator, Exec. Programs Michael McPhee
Administrator, Program Planning & Finance Sandra J. Hughey
Program Traffic Admin. Brian Fuce
Data Coordinator Heather Beauton
Manager, Ancillary Products Bill Kerber

MARKETING

VP/ Marketing Cathy O'Leary Hayes
Director, Marketing Programs Lisa Brown
Director, Public Relations Susan Watson
Research Director Bridget Cammarata
Marketing Comm. Director Marcy L. Dill
Trade Show Coordinator Dot Caspersen
Research Specialist Caroline Cerullo
Publicist Karen Fogerty
Marketing Comm. Specialist Lisa Wilson-Wirth

ADMINISTRATION

VP/ Finance & Admin. Walter Manninen
Assistant to the Publisher Diane Martin
Office Specialist Cara Kelley
Billing Supervisor Lynn J. Palmquist
Financial Analyst Kerry Grady

INFORMATION SYSTEMS

IS Director David Woodall
Manager, Network Services James C. Burgoyne
IS Specialist Katy Tynan

Digital_Nervous_System:
intelligent evolution

What is a Digital_Nervous_System?

In the beginning, you had to figure out how to make a bunch of disparate pieces work together.

That was the fun and the challenge and the job. Making parts work together. Making technology work.

That's what has always intrigued and challenged us, too. Just a few years ago, it was a breakthrough to be able to drop spreadsheet figures into a Word document. Now, with the explosion of the Internet and advances in chip speed and software functionality, it's things like accessing real-time figures in a database from a laptop thousands of miles away. Or doing collaborative work across three countries via an intranet.

The time has come when you can build pretty much any kind of technology system you want, to do anything your company needs to do. When that technology system lets everyone in your company harness and share information freely, we call it a Digital_Nervous_System.

With a Digital_Nervous_System, the best thinking can happen at all levels. Data becomes knowledge. And knowledge becomes an advantage.

A Digital_Nervous_System relies on distributed PCs and integrated software to make information flow more rich, rapid and accurate. It helps everyone act faster and make more informed decisions. It prepares your company to react to unplanned events. It helps close the gap between your company and its customers. And it lets people focus on business, not technology.

©1998 Microsoft Corporation. All rights reserved. Microsoft, BackOffice, Windows, Visual Studio and Where do you want to go today? are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

What's in a Digital_Nervous_System? Up-to-date PCs. Universal e-mail (encompassing overseas offices, clients and vendors). Common productivity software (word processors, spreadsheets, etc.). Business-specific applications (either off-the-shelf or custom-built). And integration with the Internet.

You may have most or all of these things now. But a Digital_Nervous_System is more than just parts—it's how these parts relate to each other. How they're integrated.

And at its heart is software that acts alike, works alike, thinks alike.

Naturally, we believe our software provides the best foundation for a Digital_Nervous_System. We built Microsoft® Windows®, Office, BackOffice® and Visual Studio™ from the ground up to work together in the same familiar way. To provide the greatest level of software integration possible.

They also work with an industry's worth of applications, so incorporating new software solutions is easier. Taking advantage of hardware advances is easier, too. Integrating Internet capabilities is easier. Managing all the pieces is easier. Managing change is easier.

With a foundation of integrated software, it's easier to build and adapt a Digital_Nervous_System over time that meets your company's unique needs. You dream it up. You tailor it. You make it work.

Where do you want to go today?® Microsoft®

www.microsoft.com/dns/

Publisher's Note

Do you have any large, strategic deals—deals with contingency pricing pending your signature by March 31, 1998—lying on your desk? Whether you do or don't, I want you to grab your calendar. Mark Tuesday, March 31, 1998, with this reminder: "Do not sign off on any strategic deals with vendors, systems integrators or VARs on this date." Now flip to June 30, Sept. 30 and Dec. 31 and make the same notation. "Why am I doing this?" you ask. I'll explain in a moment. You need, however, to do some more homework.

PHOTO BY WEBB CHAPPELL

Get on the World Wide Web and compile a list of the fiscal/calendar year-ends for your strategic vendors. Put a double asterisk next to end-of-year dates for each vendor.

Now you are set to buy smart. And you will avoid the long-term pitfalls associated with IT buying binges in the last two hours of the quarter.

Take the deals pending a March 31 sign-off and call those vendors. Tell them this: "I like your pricing, but even with the executive committee of my company drilling down on cost of ownership, etc., I am going to have to pass on the March 31 contingency deal. Let's talk in April."

Listen carefully to each vendor's response. The more a vendor pushes back, the more sure you can be that this deal may be better for the vendor than it is for you.

Bottom line: Deals made in the last two hours of the quarter are just plain bad all around. They are bad for the vendor because less revenue means less ability to innovate. Less revenue means lower levels of support and service. Less revenue means lower profitability. Lower profitability, well you know where that leads. These deals are bad for you. No user wants to get stuck with an IT plan built on the back of a vendor that isn't growing and innovating, or, worse yet, is going out of business.

So in the coming weeks, when vendor reps come calling with their "make my quarter" deals, resist and tell them to come back in April.

Gary J. Beach

gary_beach@cio.com

CIO SALES OFFICES

President, CEO and Group Publisher
JOSEPH L. LEVY
508 935-4601

Publisher
GARY J. BEACH
508 935-4202

Senior VP/Sales
MICHAEL J. MASTERS
973 244-5500, Ext. 21

EAST COAST

Regional Director/Advertising Sales
FRANK S. GENOVESE
973 244-5500, Ext. 19

Regional Manager/Advertising Sales
EILEEN P. LOBAUGH
973 244-5500, Ext. 18

Advertising Sales Associate
STACY G. GREIMEL
973 244-5500, Ext. 16

Advertising Sales Associate
JOAN BONADEO
973 244-5500, Ext. 17

Advertising Sales Associate
ANGELA FUNG
973 244-5500, FAX 973 227-1565

NEW ENGLAND

Regional Manager/Advertising Sales
LEN GANZ
508 935-4039

Advertising Sales Associate
STEPHANIE ROY
508 935-4092, FAX 508 872-0618

SOUTH CENTRAL

Regional Manager/Advertising Sales
ROBERT E. SAWDON

Advertising Sales Associate
SOUNTHALY OUTHAVONG
512 306-9801, FAX 512 306-9805

NORTH CENTRAL

Regional Manager/Advertising Sales
KEITH H. KENNER

Advertising Sales Associate
ANNE SWARTZ
847 441-5005, FAX 847 441-5150

WEST COAST

Regional Director/Advertising Sales
RICHARD BASTAS
415 693-1988

Regional Manager/Advertising Sales
JAMES BARRETT
415 693-1995

Advertising Sales Associate
TIM LEONARD
415 398-8200, FAX 415 398-4649

SOUTHERN CALIFORNIA

Regional Manager/Advertising Sales
NANCY A. COY

Advertising Sales Associate
JANIS WIKANDER
714 475-5579, FAX 714 475-5583

LIST SERVICES

List Services Manager
STEPHANIE LEGELIS
508 935-4433

List Services Account Executive
KATHRYN A.W. GRAYSON
508 935-4072

List Services Coordinator
AMY McCABE
508 935-4151
800 859-5478, FAX 508 872-8506

For further sales information, visit our Web site at
www.cio.com/marketing/salesoffices.html.

Who revs Yamaha's business engine?

the answer is

Deloitte & Touche

©1997 Deloitte & Touche LLP and Deloitte & Touche Consulting Group LLC. Deloitte & Touche refers to Deloitte & Touche LLP, Deloitte & Touche Consulting Group LLC and related entities.

Trendlines

NEWS, INSIGHT, HUMOR, REVIEWS

Edited by Sara Shay

Secondhand Woes

USED COMPUTERS Your first car was probably "pre-owned." Sure, you'd have liked some flash and style, but your wallet was thinner than a prima ballerina. And as Dad advised, you needed nothing more or less than basic, reliable transportation.

Dad was a smart guy. If you could take his principles—basic and reliable—and make those the hallmarks of how your IT shop obtains desktop assets, you might squeeze a few more dollars out of your budget.

In 1996, the settlement of an industry rival's suit alleging that a prominent vendor was selling computers with used components as "new" led the attorneys general of 22 states to declare that a used component was any computer part that had ever been switched on so much as once (thus establishing the "zero-use" benchmark). Dandy protection for consumers, but a regulation that places a machine used for five minutes in the same sales niche as one used for five years is bound to place a chill on the marketplace. Beige plastic shows no rust and it's tough to locate the odometer on a computer, so if you're looking to save a few bucks, how can you know how used is used?

Mark Hanson, CEO of Pittsburgh-based DataTrend Inc., knows. Hanson's company has developed proprietary software called CyberMeter that measures the use—or abuse—a computer has experienced by tallying such variables as the number of

All A-Bored? Not on This Train

TRAVEL TIPS As they travel between Hollywood, Fla., and the amusement parks of Orlando, passengers on the Florida Fun-Train who tire of gazing at the scenery can break up the boredom without visiting the dining car. Instead, they may choose to hang glide, awash in the scent of the forest beneath or perhaps visit an Egyptian pyramid, replete with the musty smell of the crypt. How? By taking a four-minute, $5 excursion on one of eight on-board "Virtual Scentsation" virtual reality kiosks.

The kiosks' head mount displays offer three 3-D virtual adventures, which run off a laser disc. Scents appropriate to each adventure emanate inside the head mount from canisters attached to the kiosk. First American Railways Inc., which runs the Fun-Train, was the first company to install the kiosks; they are now in place at other entertainment sites in Florida and New York. The kiosks, made by Digital Tech Frontier LLC in Chandler, Ariz., are a big hit with train travelers, says Pam Petcash, vice president of entertainment for First American. "People are really amazed by the experience," Petcash says. "For instance, during the car race adventure, you can actually smell burning rubber as you turn the corners." ■

ILLUSTRATION ABOVE BY GREG CLARKE; ILLUSTRATION BELOW BY DAVID BRION

TACKLING LEADING ISSUES IN NEW TECHNOLOGIES ~ VERSION 2.0

Intel Tech Buzz

FLEXIBLE ARCHITECTURE

Delivering flexibility for the future.

The pace of change continues to accelerate. Yesterday, companies were networking their PCs and putting groupware solutions in place. Today, connectivity is moving beyond the corporate walls. Tomorrow, businesses may rise or fall on the strength of their computer linkages to key suppliers and customers.

To survive in a world of rapid change—or, better yet, to exploit it for competitive advantage—the key is flexibility. Even if no one can predict precisely what tomorrow's business computing solutions will look like, companies know they'll need to adapt and deploy them quickly, without obsoleting their current infrastructure or impacting their current ability to solve problems.

To maintain that flexibility as they expand into uncharted territory, many businesses are basing their computing infrastructure on the Intel Architecture (IA).

By choosing clients and servers based on Intel's Pentium® II, Pentium® Pro, and Pentium® processors with MMX™ technology, companies can build a robust, cohesive environment that provides power and consistency from the desktop to the data center. This common infrastructure, coupled with new Wired for Management technologies and a scalable network architecture, enables companies to deploy new capabilities quickly, yet preserve current solutions. Performance can be added where and when it's needed, easily and cost effectively.

An Intel-based environment also offers the flexibility to match the computing model to the task at hand. Whether the business challenges

intel®

demand three-tiered client/server solutions, network-centric Java*-based applications, or Internet-enabled line-of-business programs, the Intel Architecture lets companies give each user or department the solutions they need.

Adding further flexibility, Intel-based platforms are supported by the industry's widest selection of software tools, applications, and add-ons. The economics of the volume marketplace ensure that emerging solutions will likely be available first and with the greatest range of choices on the Intel Architecture.

In times of rapid change, one of the biggest mistakes is to choose a strategy today that limits flexibility tomorrow. By relying on the Intel Architecture as they build their computing infrastructure, businesses can pave a smooth path to the future—wherever the future takes them.

Today's servers: flexibility in action.

The power and versatility of Intel's processor family allows companies to create a cohesive environment that spans lean clients to departmental, application, and database servers. That environment can evolve to meet tomorrow's business requirements without disrupting what works today.

Case in point: Intel-based servers are already running 24x7, business-critical, transaction-oriented applications around the globe. Not only are the majority of file/print and workgroup servers based on the Intel Architecture, but scalable Intel-based servers are delivering reliable, cost-effective computing to the glass house as well. According to SAP, for example, 42% of all new SAP R/3* installations are on Intel-based systems.

Intel's industry-leading commitment to developing next-generation platforms will provide a smooth transition to higher performance while maintaining existing infrastructural investments. Advances in high-performance scalable server clusters and I/O will push performance even higher, as will Intel's forthcoming 64-bit microprocessor architecture. The IA-64™ architecture maintains its compatibility with Intel's 32-bit processors, and dozens of software companies are already tuning their tools and applications for top performance on the next-generation processors.

For clients, servers, and networking solutions, such as Fast Ethernet and Gigabit Ethernet technologies, Intel delivers the performance and flexibility to keep companies on the leading edge, today and tomorrow.

For more information, visit our Web site at: www.intel.com/techbuzz

©1998 Intel Corporation. Pentium, Pentium Pro, and Pentium II are registered trademarks, and MMX and IA-64 are trademarks of Intel Corporation. *Third-party names and brands are the property of their respective owners.

FLEXIBLE ARCHITECTURE

What's the Buzz?

"Intel-based servers deliver power and scalability to SAP R/3 customers at unprecedented price/performance levels. Because Intel servers are the platform of choice for so many of our customers, we optimize our products for top performance on the Intel architecture."

Dr. Hasso Plattner,
Co-Founder/Vice Chairman,
SAP

"Working closely with Intel to take advantage of its platform and processor expertise allows us to deliver Oracle products on an architecture optimized for network computing. Oracle8, the Database for Network Computing, and Intel's Pentium processor family will provide an outstanding computing platform for business solutions."

Gary Bloom,
Senior Vice President,
System Products,
Oracle Corporation

"We are enthusiastic about the introduction of Intel's new IA-64 processor family. We expect the combination of PeopleSoft and the IA-64 architecture to bring our customers additional power and scalability."

Stan Swete,
Vice President,
PeopleTools
Product Strategy,
PeopleSoft

intel®

CIO
PERSPECTIVES

Keynote Presenter
Tom Peters

April 26-29, 1998
Hyatt Grand Cypress
Orlando, Florida

The Powerful IT Organization:
Forging Customer, People and Business Partnerships

CORPORATE HOSTS

CXIOM
Bay Networks
BMC SOFTWARE
CABLETRON SYSTEMS The Complete Networking Solution™
COMPUWARE
Data General
DELL
EDS
ERNST & YOUNG LLP
HEWLETT PACKARD
Hyperion SOFTWARE
IBM
IDC
intel
INFORMIX
LBMS
LOCKHEED MARTIN
Lucent Technologies Bell Labs Innovations
mks
SEQUENT
Sprint. We help your business do more business™
StorageTek
Sun microsystems
TRANSARC Making Technology Work Across Your Enterprise
TRUE
VIDEOSERVER

To enroll, visit our Web site at *www.cio.com* or call 800 366-0246.

times the machine has been turned on and off, how many hours the machine has operated and how often the hard drive has been accessed. (Several other programs are able to take similar measures, but Hanson will not reveal the precise means by which his software operates, nor will he detail every parameter of measurement.) The secondary market presents opportunities to save up to 15 to 25 percent off the already low prices offered on current models by megastores and discounters.

DataTrend's business is to restore used machines both physically and electronically by removing fingerprint smudges from the casing and totally erasing hard drives. As the PC industry matures and more perfectly usable but somewhat used machines appear on the market, the refurbishing business is booming. In such a market, a buyer expects an updated warranty along with a well-reconditioned machine. By accurately gauging a computer's "age"—a statistic that has less to do with calendar time than with hours of operation—DataTrend makes offering a warranty economically possible for the commercial resellers that are DataTrend's customers.

As with cars, a primary source of computers for the used marketplace springs from older machines that have been leased. For example, a computer operating at 75MHz can be resurrected as a dumb terminal once it has been refurbished. But the more important source of products is retail returns. "Buyer remorse places tens of thousands of machines into the secondary market each month," Hanson says. Fearing future buyers will take high return figures as an indicator of poor quality, sellers are reluctant to reveal exact numbers, but Hanson estimates that at least 10 to 15 percent of all computers sold by retail outlets are returned within two months of the original sale.

Since a warranty, like insurance, is a hedge against disaster, the used PC market requires a standard to measure just how used is "used." Only an accurate, consistent projection of a computer's remaining useful life is what makes the secondary market possible.

–Perry Glasser

Off the Shelf

Fantasy Dinner Party

Forbes Great Minds of Business

With Gretchen Morgenson
John Wiley & Sons, 1997, $24.95

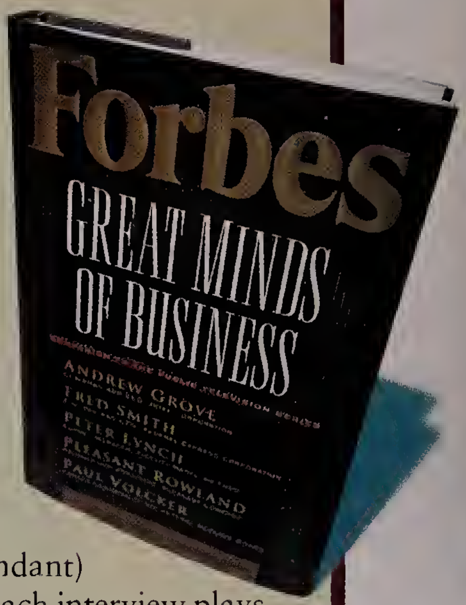


PHOTO BY VITO ALUIA

IMAGINE AN ELEGANT MEAL FEATURING conversations with Andrew Grove, Frederick Smith, Peter Lynch, Pleasant Rowland and Paul Volcker, and you've got the essence of *Forbes Great Minds of Business*, a companion book to the PBS television series that aired last fall. The five chapters are set up by *Forbes* Senior Editor Gretchen Morgenson as Q&A sessions with each luminary, preceded by an (occasionally redundant) introduction. The casual but insightful nature of each interview plays out for the general business reader as if he'd been delivered by limousine to an evening of revealing repartee.

Indeed, the best parts of the book are the personal touches: why Intel Corp. Chairman and CEO Andrew Grove embraces fear; how Federal Express Corp. founder and CEO Frederick Smith's experiences as a Marine in Vietnam balanced his perspective in the company's early days; how former Fidelity Investments manager Peter Lynch involved his neighbors in determining a stock purchase; why Pleasant Rowland, founder and president of the American Girls doll conglomerate, Pleasant Co., helps answer the telephones during the holiday season; and how former Federal Reserve Board Chairman Paul Volcker's father inspired his ethos of government service.

The interviews also offer some great examples of nonlinear business thinking. For example, at one point in 1985, Intel was getting hammered in the memory business. Conferring with cofounder Gordon Moore, Grove asked, "If the board kicked us out and hired a bunch of new people, what would they do?" That kind of innovative thought process helped Grove determine the best course of action (which was to get the heck out of the memory business). Similarly, when anybody scoffs at Rowland's seeming diffusion into dolls, clothing and magazines, she rejoins that she's not in those businesses; she's in the "little girl business." (As a matter of fact, she says it a little too often, just as Lynch repeatedly cites how bad the economy was in 1990.)

Along with nonlinear thinking, there's also a great deal of common sense. Lynch notes that if you invest $1,000, all you can lose is $1,000, but you can make considerably more. "You can be wrong in this business three or four times out of ten and still make money," he notes. Nice odds. In addition to pertinent advice, there are some gaffes, to be sure. *Forbes*' Morgenson lets Grove off too easily in the discussion of how he handled the 1994 PR disaster that ensued after the discovery of a floating-point bug in the Pentium chip. And in a picture of Grove delivering a trade show keynote address, the caption identifies the event as Comdex, even though he's standing next to a podium clearly marked PC Expo.

Overall, though, *Forbes Great Minds of Business* is a tasty five-course meal that's both memorable and easily digestible.

–Howard Baldwin

Make It Consistent. Make It Quick. Make It Reliable.

The SAS® Data Warehousing Solution

Making it Easy to Deliver the Right Data...to the Right Decision Makers

Datamation
1997 Product of the Year
IS MANAGERS' CHOICE
Category: Data Warehousing

DM REVIEW
Readership Award 1997
Category: Data Warehousing

So much business data. Scattered in so many places throughout your company. Is it any wonder you find it difficult to provide access to consistent, reliable, and timely information to fuel effective decisions? The SAS Data Warehousing Solution—from the world's leading decision support provider—helps you meet the challenge.

The SAS Data Warehousing Solution lets you provide a *single* version of the truth to your entire business community...as you make optimal use of your existing hardware, software, and data.

What's more, we'll guide you every step of the way—from getting started to managing your data warehouse. One solution brings you the approach, technology, and resources you need. We'll provide the entire solution, or integrate easily with your existing technologies.

The Data Warehousing Product of the Year

See for yourself why 200,000 IT managers named the SAS solution their Data Warehousing Product of the Year...for two years running. Visit us at **www.sas.com/dw** for more information and to request a **free** SAS Data Warehousing mouse pad.

Data Integrity and Quality

Seamless Integration and Process Automation

Maximum Return on Investment

Step-by-Step Implementation

Web Enabled

Year 2000 Compliant

SAS Institute Inc.
The Business of Better Decision Making

E-mail: cio@sas.com www.sas.com/dw 919.677.8200 In Canada 1.800.363.8397

SAS is a registered trademark of SAS Institute Inc. Copyright © 1998 by SAS Institute Inc.

TO SUSTAIN LIFE OUT HERE, THERE ARE A FEW THINGS YOU MIGHT WANT TO CONSIDER.
Ice axe.
Safety rope.

For application development, testing and management, four out of five of the world's largest corporations rely on Compuware. People and software for business applications.℠

©1998 Compuware Corporation 800.521.9353 www.compuware.com

Glacier glasses.
Warmth.
COMPUWARE
What do you need most?℠

Trendlines

Share the Wealth

NONPROFITS What hundreds of companies spend fortunes to build and maintain, a modest, nonprofit community-improvement group has launched using just donations and volunteers. The Coalition for Healthier Cities and Communities (CHCC), a Chicago-based organization representing more than 1,000 communities and 200 hospitals, voluntary associations, businesses, faith groups and public health departments, introduced *www.healthycommunities.org* in February. The site's objective: to connect community organizations that want to share information. For example, through the site a well-baby clinic looking for pediatric dietary recommendations can access a database called "Careguide," which provide links to resources such as children's agencies, a bulletin board and a discussion forum.

"We're trying to make this not so much the coalition's Web site but that of the entire community movement," says Tyler Norris, CHCC executive director. "If we can get most of our members to take 15 minutes to post their stories, this will be one very rich tool."

CHCC enlists national leaders and volunteers in individual cities to support initiatives that serve urban and rural communities across America. A year ago it became a charter supporter of America's Promise, the volunteer program led by Gen. Colin Powell that intends to provide at-risk young people with educational resources.

CHCC did get some help launching the site from high-tech companies including Informix Software Inc., Netscape Communications Corp., Hewlett-Packard Co. and Fort Point Partners Inc., which collectively donated more than $500,000 in products and services. Still, it's a shining example of the power of the Web to maximize limited resources for greatest return. ■

CIOs to the Rescue

TURNAROUND TIPS In the best of all possible worlds, the CIO is already proactive, focusing on the future, encouraging communication. During a turnaround, though, the need for a hero—complete with cape, muscles and superhuman strength—increases exponentially. You can be that hero if you heed the following suggestions from CEOs and CIOs who've been there.

1. **Step forward.** No one knows more about a company's technological and business underpinnings than the CIO. Emotionally, you may not want to put the spotlight on yourself, but you must. "There's a natural reticence to stand up and say, 'This is what I know,'" says Wolly Morin, a 22-year IT veteran. As the former vice president of IT at Hills Department Stores Inc. in Canton, Mass., he was smack dab in the middle of that company's turnaround.
2. **Collaborate with other executives.** Once you've stood up and been counted, you need to take a leadership position. You must develop a social architecture to go with the network architecture and spread your ideas beyond the IS department, advises Jack Cooper, vice president of information management at Bristol-Myers Squibb Co. in New York City. Adds Morin, "Once you align yourself with the business people, you're viewed as a partner rather than a techie. It doesn't happen overnight, but you have to be willing to initiate a change in your behavior."
3. **Stifle misinformation.** Nothing diminishes productivity more than rumors and gossip. It's the CIO's responsibility, as the person in charge of IS, to make sure the right information is disseminated. "In a turnaround, I've made sure that everybody gets everybody's e-mail," says Bob Root, a partner at BRSS Coaching and Consulting Inc. in San Diego and a longtime turnaround coach. That diminishes everyone's fear factor by eliminating secrets and uncertainty. One method: Create a Web-based corporate newsfeed similar to PointCast.

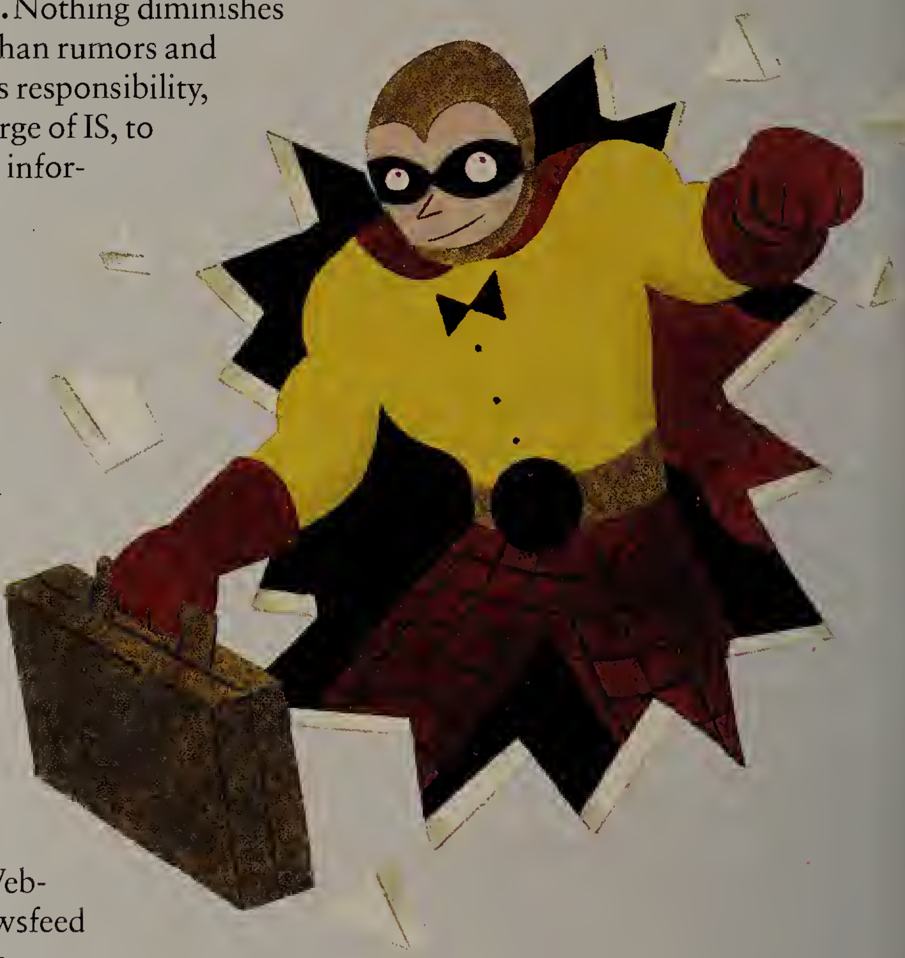


ILLUSTRATION BY GREG CLARKE

4. **Take advantage of chaos.** The silver lining to chaos: The need for change is so obvious that it's easier to suggest radical ideas that would have been pooh-poohed in a more stable time. "Everyone's much more receptive to making changes in a failing company than in one that's doing well," notes Cooper.
5. **Focus on the future.** When finances are going south, the natural inclination is to point fingers. As a CIO, you can use this inclination to focus the company on the future. "Most turnaround people slash and burn and deal with the past. If you create a company story, a vision, like you're sitting around a campfire telling stories, the natural human tendency is to start thinking good thoughts," says Root. "If [the employees] have succinct information and it's focused on their new mission, it will tend to increase their emotional contentment and their dedication."

–Howard Baldwin

WE DON'T MAKE THE WORLD GO AROUND.
SAP R/3 COMPLEMENTARY SOFTWARE CERTIFIED INTERFACE
IBM Business Partner
on ORACLE
Microsoft SOLUTION PROVIDER
BUT WE IMPROVE THE PRODUCTIVITY OF 20,000 COMPANIES THAT DO.

For over two decades, Kronos time and labor management solutions have helped enterprises optimize labor resources and employee productivity. Our systems help to manage over 18 million employees worldwide by providing decision makers with critical time and activity information. Benefit from our expertise today. Call 1-800-225-1561, ext. 8111, or visit our website.

KRONOS THE TIME & LABOR MANAGEMENT EXPERTS WWW.KRONOS.COM

©1998, Kronos Incorporated. Kronos and the Kronos logo are registered trademarks of Kronos Incorporated.

Trendlines

It Was a Dark and Stormy Night...

ONLINE PUBLISHING Has your great American novel garnered one too many rejection letters? Well, forget about those snooty, hard-to-please publishing houses and turn instead to Enchanted E-Books, a Web-based business that lets you publish your oeuvre on the Internet. E-Books, based in Redlands, Calif., and owned by Richard Harper and his wife, Nancy Hart, caters to unpublished authors who are seeking an outlet for their writings. For a $99 processing fee and with copyright in hand, an author can electronically send his or her manuscript to the site, where an editor is assigned to it. E-Books then decides whether the work is suitable for publishing on its site and will refund the fee if the manuscript is rejected. Once a manuscript has been accepted, E-Books sells the books in electronic form from its site for anywhere from $1.75 to $3.50. Harper says that of 50 submissions, the site has published 40 and more are in the works.

If you'd prefer to start your electronic library with the works of better-known scribes, E-Books also offers the full text of 120 public-domain classics in all genres, four of which *(Peter Pan, The Wonderful Wizard of Oz, Not So Long Ago* and *Alice's Adventures in Wonderland)* are free. Harper and Hart are proponents of electronic books, which can be downloaded and stored on a computer, a mode of book ownership they say can be very satisfying. In fact, one story published on their site argues that by owning more electronic books, bibliophiles can make moving to a new abode much easier by alleviating the onerous task of lugging heavy boxes of volumes. Visit Enchanted E-books at *www.e-books.com.* ■

PHOTO BY VITO ALUIA

QUOTABLE

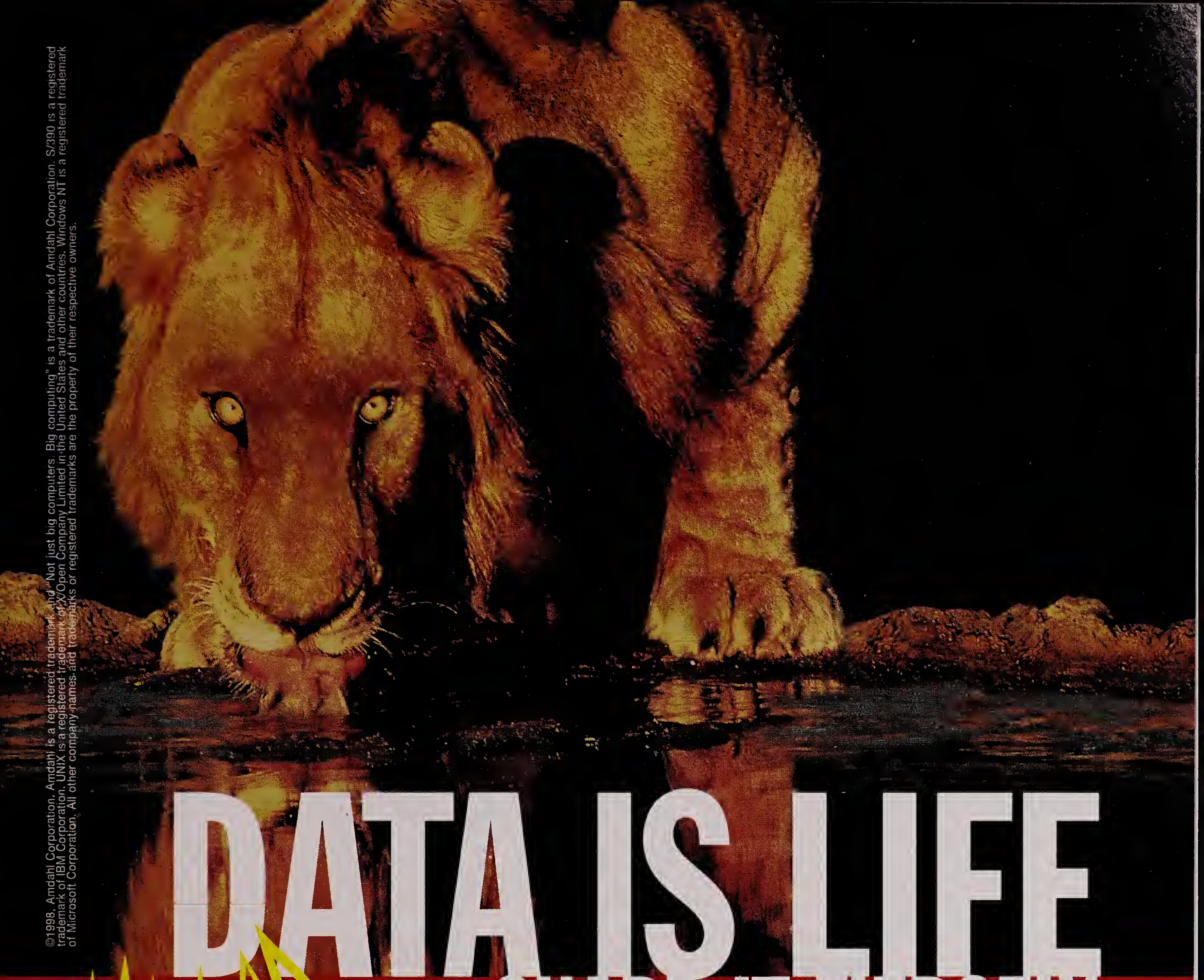
> *"Many people will sell their privacy for a small amount of cash."*
>
> **-John Sviokla, assistant professor, Harvard Business School**

But Can They Get Extra Credit?

ADDICTIONS As if you didn't already have enough worries about sending your kids off to college, what with drugs and alcohol and grading curves, now it turns out that there is yet another cause for alarm: Your child could become an Internet addict.

Apparently, a study has shown that freshmen and sophomores at the University of Michigan average 10 hours a week on the Internet, with 18 percent logging 20 hours or more online. And at Alfred University in New York, administrators have found a link between an increased rate of academic dismissals and high Internet use. Some universities are responding to the ever-growing problem by limiting available Internet time and establishing counseling centers for students who can't quit on their own.

These findings and other information about this modern addiction appear in an article by Jonathan Kandell of the University of Maryland at College Park in the first-ever volume of the *CyberPsychology and Behavior* journal, which publishes reports on nouveau societal and behavioral problems caused by the Internet, multimedia and virtual reality. Future issues will include articles about computer phobia, Internet content restrictions and social isolation. ■



DATA IS LIFE
GUARD IT FIERCELY

AMDAHL BREEDS S/390®, UNIX® AND NT® SYSTEMS TO DEFEND YOUR CRITICAL DATA.

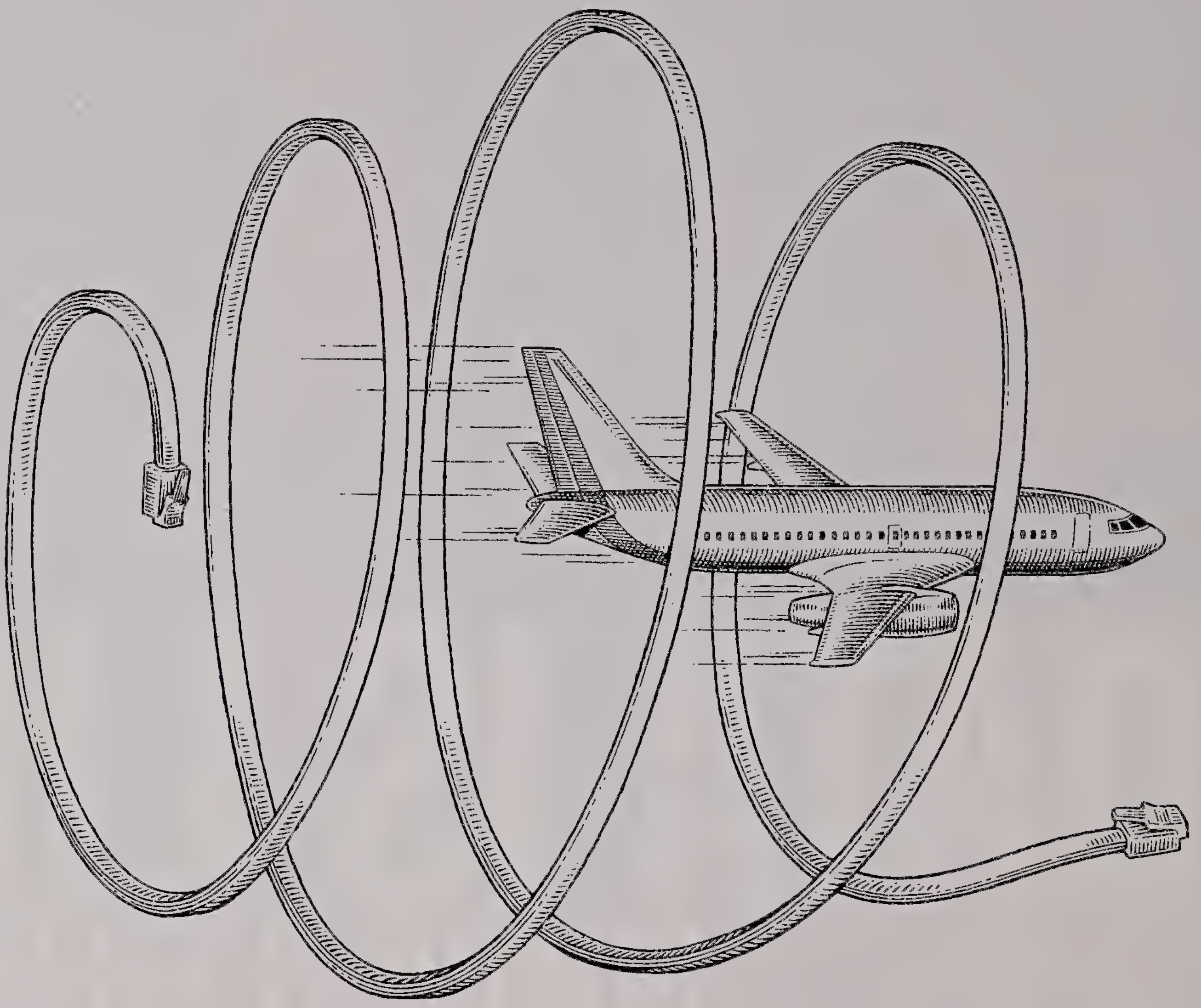
STRANGERS BEWARE.

Amdahl delivers S/390, UNIX and NT systems with unparalleled levels of availability and fault tolerance. A quarter century in the world's largest data centers has made eternal vigilance our primal instinct.

NOT JUST BIG COMPUTERS **AMDAHL®** *BIG COMPUTING™*

(800) 223-2215 ext. cio4 or www.amdahl.com/cio

©1998, Amdahl Corporation. Amdahl is a registered trademark and "Not just big computers. Big computing" is a trademark of Amdahl Corporation. S/390 is a registered trademark of IBM Corporation. UNIX is a registered trademark of X/Open Company Limited in the United States and other countries. Windows NT is a registered trademark of Microsoft Corporation. All other company names and trademarks or registered trademarks are the property of their respective owners.



© 1997 Novell, Inc. All rights reserved. Novell is a registered trademark, and intranetWare, NDS and Rock the Net are trademarks of Novell, Inc. in the United States and other countries.
In 1996, a survey by the United States Department of Transportation rated Southwest Airlines as the top U.S. airline.

ROCK THE NET

HOW SOUTHWEST AIRLINES CONNECTED WITHOUT RESERVATIONS.

How do you get to be #1?
Southwest Airlines did it with on-time performance, baggage handling and overall customer satisfaction.
Which made their business boom—and their network explode.
In 1991, Southwest had just 100 nodes and four different operating systems—
and reservations ran on a separate mainframe.
None of these resources could communicate with each other, and administration was difficult.
Today, the airline has over 6,000 nodes running on just one operating system with seamless intercommunications
throughout the entire system, all managed by just six network administrators.

[Novell® IntranetWare™ makes it possible.]

IntranetWare technology is helping Southwest move into the future
because it's the only networking software that can handle their rigorous requirements, such as putting 550 users on a single server.
Yet it has the stability, reliability and high availability demanded for a customer-dependent business.
And because IntranetWare is tightly integrated with NDS™—the world's leading cross-platform directory service—
Southwest can easily manage and control their entire network with single-source administration.
IntranetWare offers the best management and control of increasingly complex networks, including the Internet and corporate intranets,
reducing overall network operating costs—and making all the right connections.
www.novell.com/intranetware

Novell®

INTRANETWARE

Executive Counsel *Edited by Sara Shay*

MANAGING YOUR CAREER, STAFF AND PROFESSIONAL RELATIONSHIPS

Heir Supply

Establish a line of succession for vital IT positions before the need arises

BY MATT VILLANO

THE NOTION OF BACKING UP valuable resources is nothing new to IS managers and staffers. If you've got a heavily trafficked server, a crucial piece of programming or just some important files, you're safer with fallbacks for each. That way, if the system crashes or a virus attacks, you've still got everything under control. Now imagine the same kind of backup, only on the corporate level, with IS personnel themselves. It's called succession planning, and more and more companies are using it to back up their most valuable people—in case one leaves unexpectedly or can't otherwise fulfill his or her responsibilities.

And it works.

Once a strategy used only in developing the business side of corporate operations, succession planning is becoming more common within IS divisions. Experts see the move as a "human insurance policy" and agree that succession planning is as important to IS as it is to other departments.

"It's a smart company that has its CIO and top IT brass backed up internally," says Mark Polansky, managing director of the IT practice for Korn/Ferry International, an executive search firm based in New York City. "Given the mobility and demand level for good IT people, a company doesn't want to leave itself vulnerable to having a vacancy in a crucial position at a crucial time. Backing up your top positions just makes sense."

For some IT departments, adhering to comprehensive succession planning policies is routine. Such is the case at Xerox Corp., a company that has capitalized on one of the oldest and most weathered IT succession strategies in the country. Corporate Vice President and CIO Patricia Wallington says succession planning—known to Xerox employees as Management Resource Planning—is a major developmental tool in every department and has been a part of the company's IT substructure for almost 25 years. "Every one of our upper-level managers is supposed to be able to name two or three replacements, on the spot," Wallington says. "It comes with the territory—you're expected to know your budget, your list of daily meetings and your backups."

Xerox's MRP program is an annual procedure coordinated by the Stamford, Conn., company's human resources department; Xerox HR Director Bob Monastero says more than 65 percent of all positions in the company's IT department have been filled through this process. The company proceeds with MRP even if there are no jobs to back up. Every year, employees complete questionnaires and self-assessment forms that are then reviewed by IS managers. The managers, in turn, evaluate their employees based on the employee self-assessments and personal interviews. Both files are entered into an HR database that is reviewed by department heads, vice presidents and the CEO. When the annual procedure is completed, each employee is assigned a succession planning status distinction: ready to fill a new position within one year, ready in one to three years or not ready at all.

Through this process, Wallington says, talented staffers not only are con-

CORNER IMAGE BY CARL TREMBLAY; ILLUSTRATION BY DOUG ROSS

OUR DRIVES HAVE BEEN CLOCKED AT 10MB/S.

©1998 Quantum Corporation. All rights reserved. Quantum and the Quantum logo are trademarks of Quantum Corporation, [illegible] other countries. Capacity for the Extraordinary and DLTtape are trademarks of Quantum Corporation. All specifications reflect 2:1 data compression.

THE DLTTAPE™ SYSTEM from Quantum is just the (pardon the expression) ticket when it comes to quickly backing up critical data. And we should know. We made the DLTtape system what it is today: one of the fastest, most reliable, scaleable, data backup solutions in the business. Which is quite significant these days, since the amount of information needed to be stored is increasing, while the window to do it in is shrinking. Fortunately, nothing in the mid-range market is faster through a window than Quantum's DLTtape system. Take one for a drive and you'll understand. For more information call 1-800-624-5545 x7000 or www.quantum.com • www.dlttape.com

Quantum™
CAPACITY FOR THE EXTRAORDINARY™

sidered for promotions but also receive increased visibility among the managers who have the most influence in advancing the staffers' careers.

"As important as succession planning is for a company, it's also a useful career planning vehicle for the staffers themselves," Wallington says. "Succession in the [IT] field relies heavily on credibility among the senior executives, and the more familiar a name or a face, the more of a chance that person has to move up and on in the company and in his or her career."

Once it is known a position will become available, an IS manager makes a list of potential backups and interviews those employees. During these second interviews, the MRP evaluations are discussed. Potential backups are asked to role-play ("If you were in these shoes, how would you handle this situation?") and explain why they are qualified to back up the job in question.

After the interviews, a decision is made. Candidates are usually invited to fill positions immediately, and 9 out of every 10 candidates accept. Of those who demur, some explain that they don't want the added responsibilities (and the accompanying stress) of becoming a backup. Others express a desire to remain in their current positions.

While the procedure of choosing backups is mostly successful, sometimes it can leave egos badly bruised. "We've had instances where the whole notion of having a backup and knowing who it is makes [an incumbent] paranoid," says Wallington. "A person begins to wonder: 'Why do I need a backup? Does that mean I'm not good enough?'" There's no "right" way to answer questions like these, but Wallington says she usually responds by reminding the employee that succession planning is about the company's future, not individual accomplishments.

"You'd think everyone would see planning ahead like this as a good idea, but not everyone does," she says. "While your primary objective is ensuring the company's survival, it's also important to keep in mind that behind every position is a living, breathing person who often has worked a lifetime to get where he or she is. That's not something to take lightly."

While Xerox's IS department has benefited from having a succession strategy, across the state line in Pleasantville, N.Y., The Reader's Digest Association Inc.'s IT department suffered in the past from not having one. The Digest, a publishing and direct marketing company with offices in more than 40 countries, didn't have a formal IT succession plan until last summer. When the company's former CIO left more than two years ago, the IS department limped along for almost 18 months without a CIO. IS staffers describe the year-and-a-half before current CIO David Starr's arrival in spring 1997 as perhaps the worst technical and financial chaos they had ever seen.

"We're a perfect example of the kinds of bad things that can happen when you don't cover your behind," Starr says. "If it were the CEO or CFO who had left, there'd have been a long list of people ready to fill the spot. But with us, until the company was faced with this major IS leadership catastrophe, nobody ever thought it was at all important to back up the [CIO] position."

When Starr's predecessor became CIO in 1989, the company was running seven mainframe systems: one in the United States and six in other parts of the world. In late 1993, he began planning an unprecedented scale-down to reduce the number of systems to two. But when he resigned unexpectedly in late 1995, those plans were abandoned. Within six weeks of his departure, three of the Digest's five IT directors left as well. Without a succession strategy, Digest executives were faced with an IS department short four key players and an IT infrastructure in total disarray.

Reader's Digest began searching for a replacement CIO and in the interim outsourced much of its IT work to consultants at significant cost. The company's IS offices around the world, suddenly without leadership from headquarters, took charge of their own systems, developing them to serve their individual needs.

Enter Starr, fresh off a three-year stint as CIO of ITT Corp. Company executives made it clear they would not make the same mistake twice: They told Starr to plan for the future from both a technological and a managerial point of view. Starr had experience in both areas. "When I was at Citicorp, before I went to ITT, we used to have charts pinned to the walls of an office showing who backed up whom," he says. As at Xerox, "everybody, from the programmers to the custodians, had someone ready to fill his shoes."

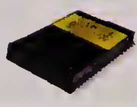
> **"Until the company was faced with this major IS leadership catastrophe, nobody ever thought it was at all important to back up the CIO position."**
>
> *–David Starr*

Within six weeks of joining Reader's Digest, Starr implemented a companywide IS succession planning policy tied to the HR review process. When Starr and his IT directors reviewed employees, they asked them questions like, "If you were to see someone taking over your job after you've left, who would it be and why?" and "Think of it like a police drama; who'd be your first choice to cover your back?" He also worked with staffers he considered particularly "confident, ambitious and intelligent" to identify positions for which they wanted to be backups. To make sure the same process was used throughout the company, Starr met via videoconference, phone and e-mail with IS managers in the Digest's various outposts. With few exceptions, staffers appreciated the attention, which they indicated in periodic HR surveys.

Today, almost every upper-level IT employee at Reader's Digest has a backup. In some cases, the backups have backups. Other positions have "pools" of eligible backups, any member of whom could fill that job at a moment's notice. Backups are reminded that they are part of a plan for the future, so as not to make anyone antsy about job security. All succession information is documented, and when an IS position becomes available, Starr checks the files first. If a backup has been determined previously,

EXTREME FREEDOM.

When you're in a situation that allows no margin for error, you need to be sure of your equipment. That's why the crew relies on ThinkPad® notebooks to deliver navigational plots in real time, all the time. If they can enjoy that kind of freedom working 300 miles above Earth, just think what you could be doing when you're on the road. Call 1 800 426-7255, ext. 4727[1] or visit www.ibm.com/pe/us/thinkpad. A better place to think.

The ThinkPad 770* *An unsurpassed combination of power and mobility.*	*233 MHz[2] Pentium® processor with MMX™ technology*	*14.1" screen*	*5.1GB[5] storage capacity*	*With Options by IBM you can get an additional Li-Ion battery for the flexibility to work longer or a Cordless Computer Connection for greater convenience and mobility.* 
		Dolby® Digital audio[4]	*DVD[3]*	

MMX™ intel inside pentium® PROCESSOR

*Model 1AU only. Other 770 models/features will vary. [1]M–F, 8 am–8 pm EST, excluding holidays. We direct you to an authorized IBM Business Partner. [2]MHz refers to internal clock speed of the microprocessor only. Other factors may also affect application performance. [3]Optional drive. [4]Optional DVD drive required. [5]GB = 1 billion bytes when referring to hard drive capacity; accessible capacity may be less. IBM, ThinkPad and Solutions for a small planet are registered trademarks or trademarks of International Business Machines Corporation. Dolby is a registered trademark of Dolby Laboratories. The Intel Inside logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. PCs referenced in this ad ship with an operating system. © 1998 IBM Corp. All rights reserved

IBM®

Solutions for a small planet™

Talent Scouting

Take these steps when planning the succession of your IT all-stars

Identify replacement candidates for key jobs. Look at previous experience, track record and demonstrated competencies, or determine who could learn most from having the job. Classify candidates identified on the basis of previous experience as "ready now"; label those identified on the basis of potential as "ready later." Establish a rigorous training or orientation program for those candidates ready later, and reward those who are ready now by occasionally letting them participate as if they had already taken over the positions they're slated to back up.

Pay the most attention to the most critical jobs. While this tip sounds obvious, too many times it is overlooked. If your company lacks both a CIO and a top director, even if you have "ready now" backups for the lower-level position, focus on filling the top position first. Trickle-down planning works best, no matter how many vacancies you might face.

Document, document, document. Informal succession plans, though sometimes worthwhile, often create further confusion and disarray. Once you initiate the backup process, be sure to commit everything to writing. With hard copies of every decision, you avoid personal bias at all levels and avoid employee uneasiness about the planning process. Often the procedure is documented by HR, but depending on the company, succession strategies can also be followed within a division by, say, a succession chairperson.

Remind your employees that succession is about the company's survival, not about them personally. Many companies refer to planning for the future as contingency planning for this reason—some employees feel threatened by the idea of backups waiting in the wings. Emphasize the future, not the current act of backing up, and your employees will be much more comfortable with the entire process.

Adapted from High Flyers: Developing the Next Generation of Leaders *(Harvard Business School Press, 1998) by Morgan W. McCall, Management and organization associate professor at the University of Southern California's Marshall School of Business.*

the position is filled without fanfare before it ever becomes vacant. If no backup has been tapped, or if a backup doesn't want to fill the position for which he or she was chosen, the internal search begins anew. Going outside the company is a last resort and is a move that only Starr and his direct reports can decide to make.

"The strides we've made already show that an informal strategy of worldwide succession planning has given us the broadest possible pool from which to choose the most qualified people," Starr says. "But even if you don't choose backups, it's a great exercise to have your staffers think about who'd make a good backup."

> **"As important as succession planning is for a company, it's also a useful career planning vehicle for the staffers themselves."**
>
> *–Patricia Wallington*

Careers are always touchy subjects. Depending on a company's previous experience with succession planning, some strategies may work better than others at increasing both staff morale and department efficiency. And while most succession plans help companies brace for the future, preparing for what lies ahead isn't important to everyone. So says Steve Zarate, CIO of PeopleSoft Inc., a Pleasanton, Calif.-based provider of enterprise application software.

"There are lot of factors at work in a young, fast-growing company like ours that would work against a planning strategy," he says. "We have a very entrepreneurial atmosphere here, and among [newer] companies, it seems that it makes more sense for IT people to take any job they'd like. Careers are serendipitous, and the less structure and bureaucracy a company has, the less succession planning [it will have]."

While Zarate sees the benefits of a planning program like those at Reader's Digest and Xerox, he says such formal strategies are more the exception than the rule for companies like PeopleSoft. "On our level, it's not a linear kind of thing in the sense of vertical advancement," he says. "Instead, careers for most IS people under 30 tend to go in a zigzag pattern. If there's confusion, you've really got to ask yourself, 'Is this succession program really good for my staff?' If so, go for it. If not, then building a talented group of people doesn't [have to] include someone to step into the boss's shoes; it just [has to] include talent."

Succession plans are as different as the companies that use them. For a company like Reader's Digest—one whose IT department went without a developmental planning policy until very recently—a relatively basic strategy like Starr's, run by the CIO with assistance from HR, works best. For companies like Xerox—organizations in which contingency planning is as entrenched as management itself—multitiered plans that include compiling a database of evaluations and conducting corporatewide executive reviews are more the norm. For rapidly growing, newer companies that rely on a younger staff, like Zarate's PeopleSoft, succession planning isn't as important as aggressive hiring policies and attractive benefits.

The key to figuring out which strategy works for a company is first to identify just how extensively it should back up its top IT positions, according to Korn/Ferry's Polansky. After that, Polansky says, it's just a question of understanding what you expect from your potential backups and what your potential backups expect from you.

"As succession planning becomes more and more widespread among IT departments and staffs, we should see companies experimenting with which kind of planning works for them," Polansky says. "As every CIO has learned at one time or another, experimenting works only if you're actively seeking input. If staffers like a succession plan, more of them will want to get involved. If not, you'll find it's a lot harder to find backups when and where you want them." CIO

Matt Villano is a freelance writer based in Boston. He can be reached via e-mail at whaleman@tiac.net.

You see a perfect fit We see frame relay

©1998 Sprint Communications Company L.P.

Optimize the performance of your business applications with Frame That Fits

With Sprint Frame Relay, you don't have to worry about a force fit when it comes to your business data applications. Because we've revolutionized frame relay with different classes of service. So your SNA and LAN traffic are both optimized, for performance comparable to private line. What's more, we'll install, monitor and maintain your network to smooth the transition. And since we know your mission-critical data is crucial to your success, we provide industry-leading performance guarantees. It's a perfect fit that works for you. **Business runs on data. And data runs on Sprint.** www.sprint.com 1·888·380·DATA

Sprint®

We help your business do more business℠

Steve Junk, a vice president at Sears, would take arms against a sea of troubles before giving up his NCs.

Reader ROI

NETWORK COMPUTERS PROMISE VAST savings by alleviating IS administrative and hardware costs. But if that promise is so, why are so many industries biding their time about adopting NCs?

Read this article to learn

- What kinds of tasks are best suited for NC adoption
- How power users in a corporate culture can delay NC adoption
- Handling culture clashes and undesirables
- How to run an NC pilot program
- How to operate an "NC laboratory"

PHOTO BY GREG GILLIS

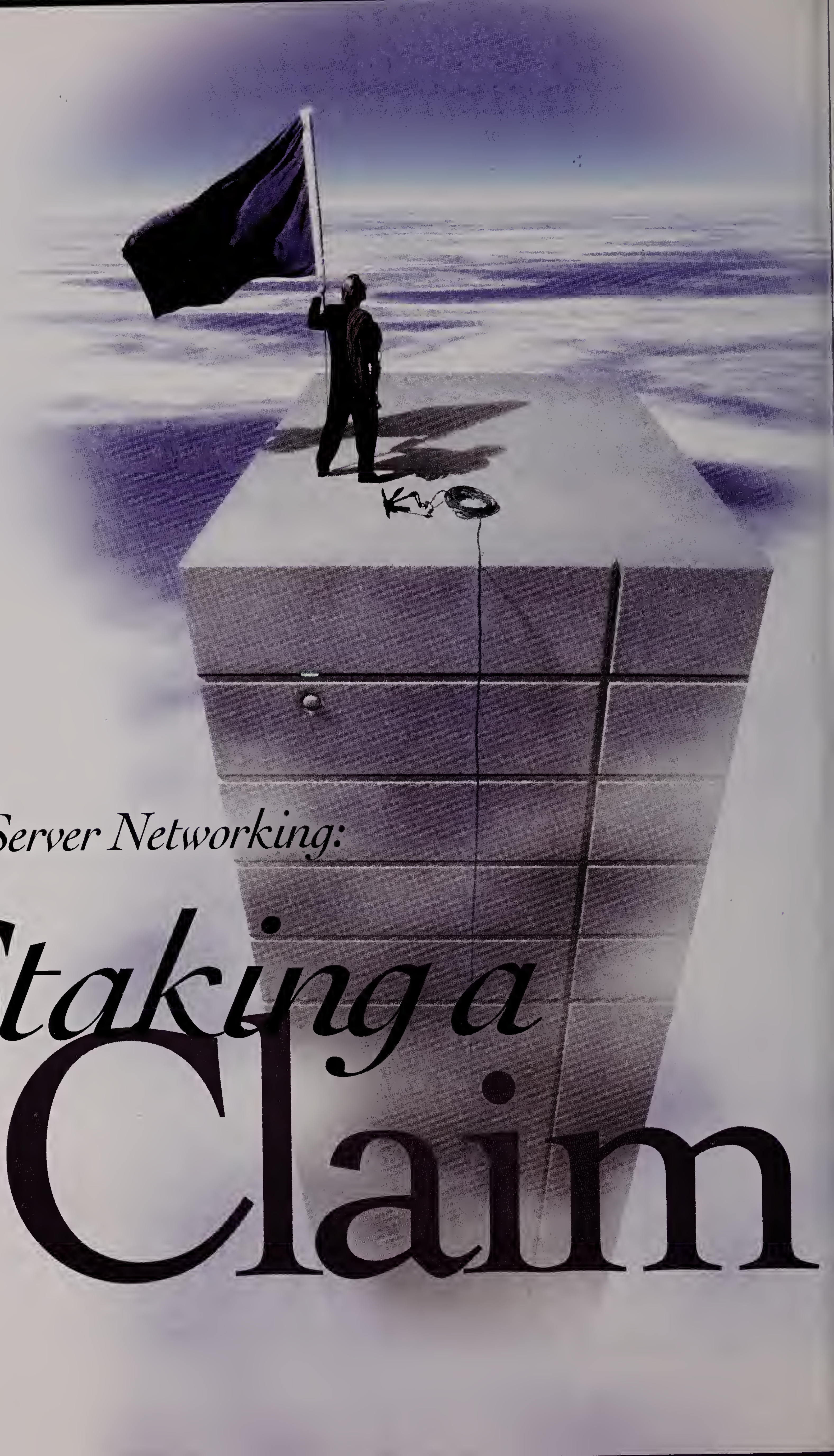
NC OR NOT NC?

That may be the question, but fence straddling is the strategy of choice when opinions are abundant and facts are few and far between

BY MINDY BLODGETT

STEVE JUNK, VICE PRESIDENT OF AUTOMOTIVE and marketing systems at Hoffman Estates, Ill.-based Sears, Roebuck and Co., says his company's recent move to network computers for a point-of-sale application made complete sense. "For us, the money savings just makes it the right way to go," he says. But John Canavan, vice president of IS and technology at Chevron Federal Credit Union in San Francisco, is not convinced. Canavan is considering NCs for a call center and for financial tellers but says "we still have several concerns about the technology—it just isn't quite there yet."

When it comes to the Shakespearean-like question, "NC or not NC?" on one side of the fence are true believers, and on the other side are those who say "no way." But the largest group by far is that third group, the one straddling the fence. That may be an uncomfortable position, but for right now waiting out the controversy about cost, capability and corporate culture may be the course of wisdom.



3Com® Server Networking:

Staking a Claim

Availability^3

Introducing the 3Com suite of server-optimized networking products. Better throughput. More robust. What better way to top off your server?

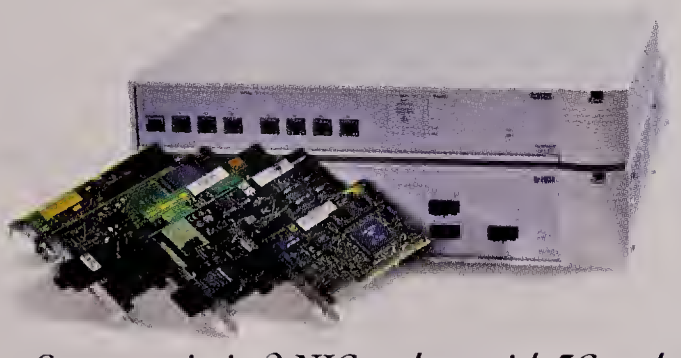
We've scaled the heights of network know-how to bring you the new definitive collection of server-optimized networking products.

Your network servers work overtime to keep every bit of business-critical data intact and flowing smoothly. To help avoid server burnout, or costly network downtime, rely on server networking products from the worldwide networking leader: 3Com.

Our ATM, FDDI, Fast Ethernet and Gigabit server network interface cards (NICs) work seamlessly with our award winning hubs and switches to ensure the fastest, most reliable access to business-critical information throughout the enterprise and over the Internet by relieving pressure on your existing servers. The result is maximized throughput with minimized drain on CPU power.

From the reliability of resilient links and self-healing drivers to the intelligence of Dynamic*Access*™ software optimizing your network performance, control and management, 3Com server networking products see to it that your cost of ownership never goes sky-high. So as your business reaches for the top and your network grows, 3Com gives you a secure foothold to achieving every goal.

Call 1-888-906-3COM, ext. 130
www.3com.com/stakingclaim/cio.html



Server-optimized NICs, along with 3Com hubs and switches, are designed specifically to relieve traffic pressure on your servers.

Copyright ©1998 3Com Corporation. All rights reserved. 3Com and the 3Com logo are registered trademarks and Dynamic*Access* is a trademark of 3Com Corporation.

3Com®

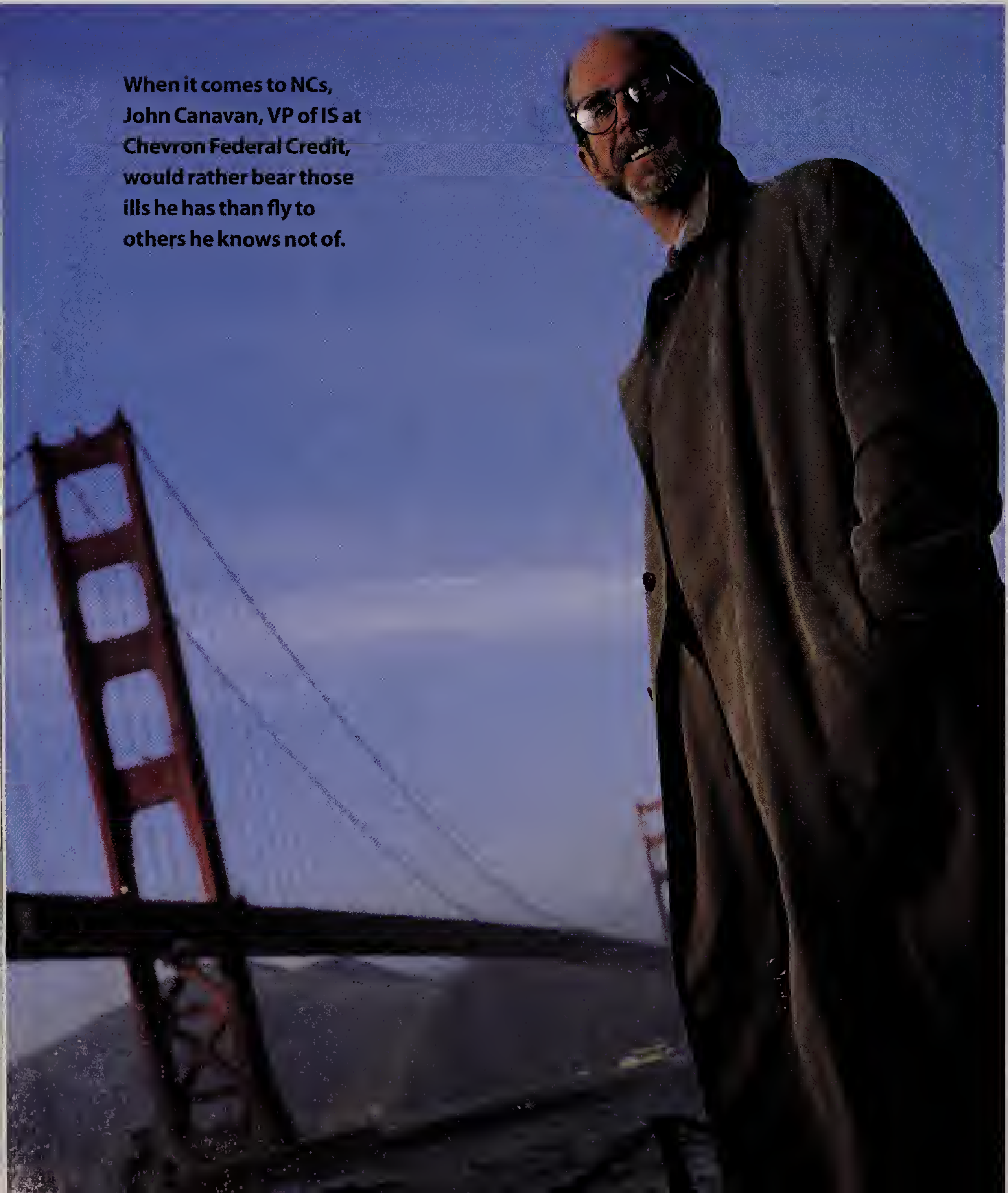
Early adopters of NCs praise the devices for bringing hardware savings and more control to IS. But many are hesitating because of the still-raging war among competing vendors—including Oracle Corp., Sun Microsystems Inc. and Microsoft Corp.—over standards and lingering questions about whether NCs will lower cost of ownership (see "Thick, Thin and In Between," Page 40). The reduced functionality of network computers and the plummeting costs of PCs keep many potential users uncommitted to the new technology. In fact, they stay away in droves.

NC Question

Do NCs fit with your corporate culture or sociology?

Where egos are tied to expensive, powerful equipment—such as laptops—NCs will be a hard sell. But where central IS has more influence over cost-cutting measures, NCs may fit with ease.

EDWARD M. ROCHE, vice president of The Concours Group, a management consulting firm in Houston, tells the tale of a large food corporation that underwent a three-month analysis, the results of which indicated that NCs might bring $3.5 million in savings within two years as well as diminish IS administrative headaches. But after examining cost analyses from several vendors such as Microsoft and IBM, the executive group decided against NCs despite potential savings. The proposed site for the NC adoption was corporate headquarters where about 200 top executives consider themselves power users. "They didn't care as much about savings as about other factors," Roche says. The projected cost savings weren't enough to overcome the executives' perception that the NC would be a downgrade from the desktop. However, Roche adds, this same company is seriously considering a nationwide NC installation at selected sites to handle the distribution of proprietary information over a company intranet.


When it comes to NCs, John Canavan, VP of IS at Chevron Federal Credit, would rather bear those ills he has than fly to others he knows not of.

The issue of power users resisting the switch to NCs is due less to the ego of the individual worker than to the culture of what is rewarded in a company. "In a company where saving money and cutting costs are not rewarded and, in fact, workers are able to order pretty much anything they want, even [expensive] laptops, NCs won't have much chance, even if they make sense," Roche says. "The sociological implications of a workplace can be important. You have to weigh those implications along with the cost issues. Companies where IS has a firm grip on costs and where end users are rewarded for cost cutting are places where NCs are a good match."

Even with all the goodwill in the world and ego needs equal to zero, the reduced functionality of NCs can bump up against the IT department's need to control costs. Because of their bandwidth-hogging tendencies and the fact that the available technology has yet to catch up with need, word processing, spreadsheets, large graphical applications and other applications used by knowledge workers are not well suited to the NC model. In addition, network computing technology does not accommodate mobile workers, a growing force in many corporations, especially among executive ranks. "The inadequacy of support for mobile workers in NCs right now is a real problem," says Brian Murphy, an analyst at The Yankee Group in Boston. "It is just too messy and difficult to send that data back and forth from the server to a laptop [on ordinary telephone lines]."

Of course, few organizations will completely replace their PCs with NCs—most companies deciding to use NCs will do so only for certain applications. "Call centers, service bureaus, order entries, reservations, point of sale: Those are the kinds of applications that make sense for NCs," says Audrey Apfel, a vice president and research director in the networking technologies group at Gartner Group Inc. in Stamford, Conn. "So industries like banking, insurance, retail, airlines and

PHOTO BY KENT HANSON

hotels are particularly interested in the technology." Roche says NCs are a good fit when companies have vast numbers of staff doing work that is limited in scope. In manufacturing companies, where cost cutting is paramount and the pressure of global competition affects a company's budget, some companies are considering switching most of their workers to NCs, including some executives.

STILL, JUST AS HAMLET delayed action because he was plagued by doubt, some executives have their reasons for waiting. Though Canavan's company is a financial institution, by many observers a sure-fire candidate for NCs, he is bothered by the confusion in the network computer marketplace and by the lack of standards among the competing vendors. "While we think we would be saving money on the hardware initially and perhaps reducing the cost of support, it would also mean adding software, hardware and administration to support a more powerful network and server," Canavan says. Enhancing his company's network is a large expense. Canavan, who implemented a desktop upgrade for his workforce of 100 last year, is waiting for the market to become more clear.

Canavan keeps up with the changes in NC technology by doing his own research and periodically checking in with software vendors. He also plans to hire a consultant this year to help IS review the company's systems and possible alternatives, including the feasibility of NCs. Once the data is in from the consultant and vendors, he will make a recommendation to the other executives at the company, and the decision to NC or not to NC will be a joint one between the IS department and the business side.

WHILE CANAVAN, like many other CIOs, is taking the prudent course of waiting to assess the NC market, some companies are moving ahead with pilot programs. Walter Klatt, vice president and CIO of Future Shop Ltd., an electronics and computer chain store based in Vancouver, Canada, is conducting a pilot program on the sales floor using NCs to support build-to-order computer sales in 10 of the company's 100 stores. Future Shop is also considering NCs for point-of-sale retail use.

Bill van Nostrand, MIS manager of Davidson Aluminum, believes NCs can endure the slings and arrows of outrageous fortune.

PHOTO BY CHRIS CASABURI

NC Question

Does network computer technology fit with your organization's type of work or application?

Technological limitations make NCs a better fit with repetitive, limited tasks such as order entry than they are with knowledge workers executing graphical applications or word processing.

Klatt says that during the first eight months, the pilot has gone well, with customers finding floor NCs easy to use. "Basically, the customer doesn't know the difference between the NCs and PCs still in use. The screens look the same," Klatt says. Most important, he says, the NCs themselves were easy to install and have so far been easy to maintain. While he says his company has as yet done no quantified analysis of the costs saved, "for me it is a support and rollout issue. We are getting few calls for support problems [from the sales help at the stores using the NCs], and when there is a problem, we can just fix it here on the server," Klatt says. Another benefit is a problem avoided: With PCs, customers and sales staff can bring in software or reconfigure hard drives and sometimes introduce viruses. "With the NCs, they can't reconfigure things locally. So we eliminate the source of a problem, which lowers our support and maintenance costs," Klatt says.

But Klatt, too, is not yet completely sold on NCs. "This is still very immature technology," he says. Like Canavan, he is concerned with the battle over NC standards, and he is disappointed that hardware prices are not as low as promised.

Steve Boehm, general manager of the First Union National Bank telephone sales and service business in Charlotte, N.C., is also biding his time. He is taking a hard look at NCs. "The ability to distribute very powerful applications across a broad user base is what is intriguing to us about NCs," Boehm says. "We could build something in our call center and distribute 80 percent of the applications on a wider basis. [NCs] give you more control from a systems management perspective and for quality maintenance."

But Boehm is concerned about integrating NCs into the overall systems strategy. "This would be a large undertaking and there are issues of scalability and coherence with the rest of our systems." To conduct his investigation, Boehm says he is "talking a lot to suppliers and vendors. We don't need to talk to consultants—we read the same press as they do. But we are looking for a vendor that can bring it all together for us, the network issues, the hardware issues, and so far we haven't found many folks who can tell us how the pieces will all fit together." Boehm says that each business unit in the bank examines its own technology needs and that he and his staff are "trying to narrow the field."

FOR SOME COMPANIES conducting pilots of NCs, the trials have led to enthusiastic support. Bill van Nostrand, MIS manager for Davidson Aluminum & Metal Corp., an aluminum distributor based in Deer Park, N.Y., doesn't think about the issue anymore. He is a big believer in NCs since he conducted a pilot comparing their functionality with the company's old system. For van Nostrand, the conversion to NCs was an easy choice—the 90 order takers using NCs in his company were previously using dumb terminals.

NC Question

Will network computers save money?

A company might lower its hardware and support costs by going to NCs, but it must also consider allocating more budget resources to network bandwidth and network support staff.

Thick, Thin and In Between

When deciding whether to switch from PCs to NCs, the lack of standards makes the trade-offs in costs and IT architecture a complex calculation

ACCORDING TO A REPORT from The Yankee Group in Boston, the network computer pie can be divided into three slices. But the IT market research consultancy warns that some devices can be part of more than one category. These categories are

- **Windows Terminals:** All processing is done at the server/host.
- **Java-Based NCs:** Processing is done at the server/host and/or locally on the client device at the desk.
- **PC/NetPC:** Processing is done at the server/host and/or locally, including Windows applications.

Users need to keep in mind the maxim "the thinner the client, the more robust the network needs to be," according to Gartner Group Inc. in Stamford, Conn.

In a December 1997 report on network total cost of ownership, Gartner said that through the year 2000, 70 percent of users deploying network computing devices such as Windows terminals can reduce their cost of ownership by 25 percent, and their network expenditures and staffing costs could increase between 8 percent and 30 percent when compared with the total cost of ownership from Windows 95 on a desktop. For example, Gartner estimates a company's annual spending could increase from $1,431 per user in the Windows 95 model to $1,857. Of that $426 increase, $143 would go to technical support labor and $283 would go to network hardware and software components. Users of network computers also need to move to larger, more expensive servers that can accommodate many users, according to the Gartner report. This proliferation of servers can add to support costs for IS, as could the need for more extensive server backup and restoration.

So Gartner warns potential network computer users that while thin clients can reduce the company's PC overall total cost of ownership, IS executives should understand the effect of the change on the network and the network staff and to be prepared for cost increases in these areas. Gartner counsels to improve training and to provide sufficient network staff to respond to the issues raised by network computers.

–M. Blodgett

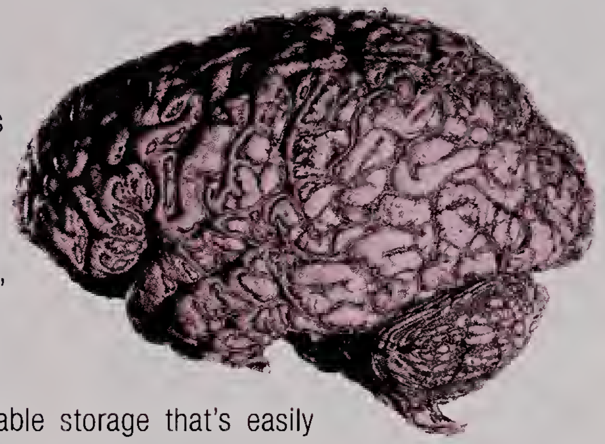
When the time came to get new equipment, van Nostrand ran a trial on eight terminals. In the trial, some of the terminals were placed in New York and some in Connecticut offices. The company tested whether the NCs had equal functionality to PCs, a test they passed. "We were testing what the maintenance was like, can we run our applications, were there any major setup issues," he says. Davidson switched to Windows-based terminals made by Boundless Technologies Inc. that ran on a Citrix Systems Inc. WinFrame application server because "the advantage of having the applications on the server is they are tightly compressed, and the bandwidth being used at the client/server level is then minimal." Davidson has data wires running between sites in New York, Pennsylvania, Florida and Connecticut, so anything that reduces bandwidth needs—and therefore transmission costs—is a significant savings.

Because their old computers were dumb terminals, van Nostrand says, employees find NCs to be an improvement. Davidson executives and power users who are on PCs are likely to remain on them. "For the most part, our sales managers and other executives are people who need to be able to store data on disks and want to take work home," van Nostrand says.

There are, however, trade-offs. Van Nostrand notes that sometimes there is a slight delay in getting data on the NC screens, but he says the lag would probably not be a problem if the company upgraded its network. "We don't want

THE FIRST INTELLIGENT STORAGE SYSTEM

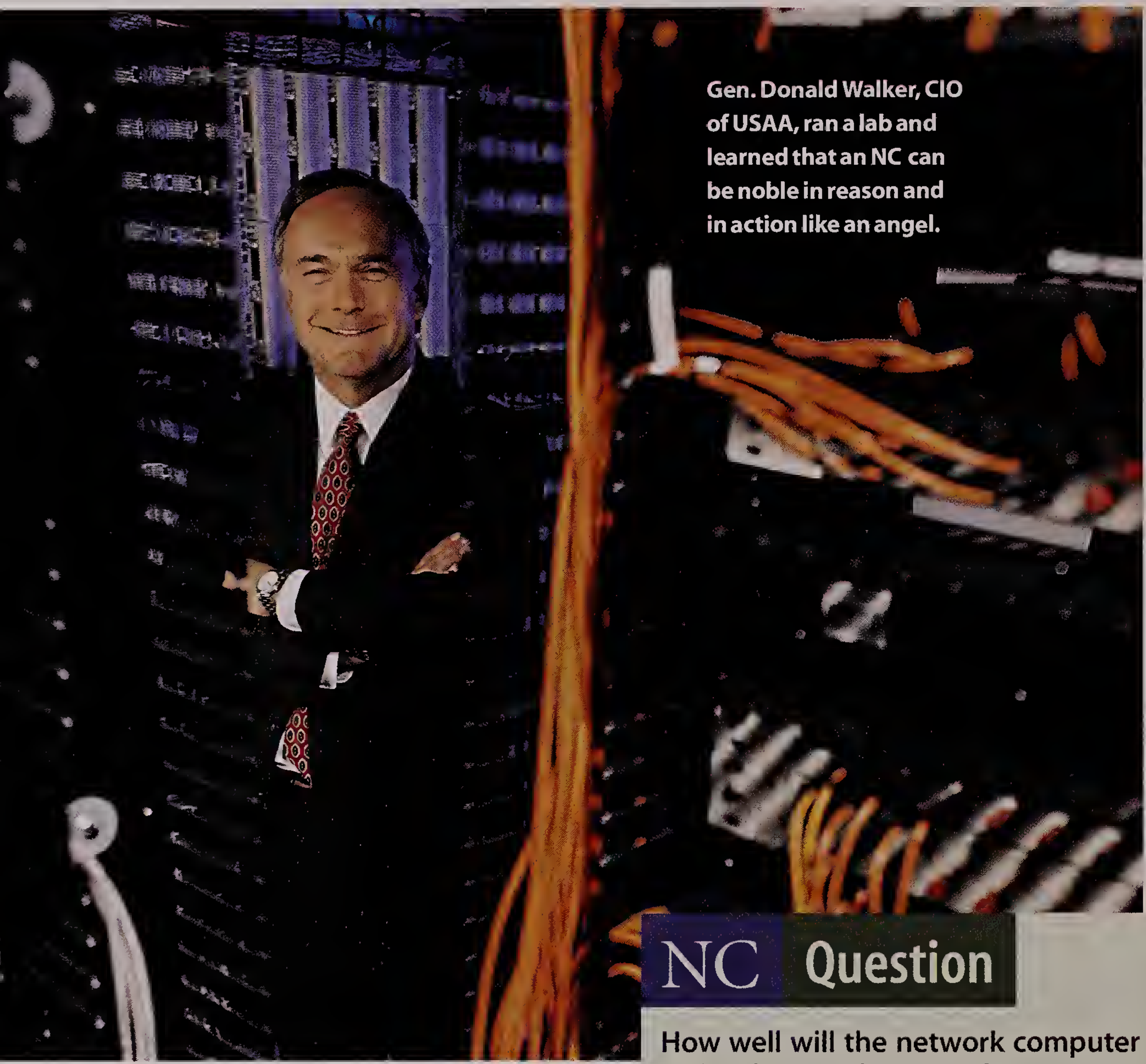
Admittedly, this isn't the first time a revolutionary way to store information has been created. But unlike its predecessor, this one can actually turn idle information into a business advantage. Introducing the Intelligent Storage Network™ platform, a network-centric storage approach (not surprisingly, from the company that created network computing) with advantages as unlimited as its scalability. All delivered through Sun™ StorEdge,™ an integrated family of hardware, software and services. Simply put, this smart new approach means scalable storage that's easily managed across mainframe, UNIX® and NT platforms. It also means true information sharing–say from your mainframe to your data warehouse–without costly and time-consuming file transfers. Add to that our industry leading fibre channel networking, and suddenly high performance is a given. But perhaps most important, our new building-block approach allows you to add what you need, when you need it. No downtime. No replacement costs. No headaches. For a Sun reseller or representative near you, simply call 800-SUN-FIND or visit sun.com/storage/cio. THE NETWORK IS THE COMPUTER.™



Sun® microsystems

THAT RIVALS THE ONE YOU WERE BORN WITH.

©1998 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, the Sun Logo, Sun StorEdge, Intelligent Storage Network and The Network Is the Computer are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. UNIX is a registered trademark in the U.S. and other countries, exclusively licensed through X/Open Computing, Limited.



Gen. Donald Walker, CIO of USAA, ran a lab and learned that an NC can be noble in reason and in action like an angel.

PHOTO BY WYATT MCSPADDEN

to pay more for bandwidth, and the lag is not that difficult to handle," he says.

NC Question

How well will the network computer technology scale upward?

Many vendor and consultant studies showing big percentage savings don't take into account labor rates and local factors and are based on relatively small installations of 20 or so NCs.

FOR TRUE-BELIEVER SEARS, the move to NCs has actually allowed the company to hold on to its aging fleet of 4,300 PCs. Steve Junk joined the company's Automotive Group after the decision had already been made to go with NCs as way to save money on a new point-of-sale application in the company's tire stores. At the same time, Sears is switching from a DOS system to Windows NT. Sears will install centralized Windows NT servers to administer the new application, turning aging PCs into thin clients. Rather than purchase 6,700 PC workstations, the company bought 2,400 NCs to use with the 4,300 PCs already in use. The machines cost Sears less than $1,000 per unit, while new PCs would have cost approximately $3,000 each.

The sales application is now running in 50 stores. Sears hopes to roll it out to all 1,100 Sears Auto Centers and National Tire and Battery locations nationwide by the end of 1998. Sears conducted a pilot on the NCs even though they were already in use at Western Auto, a company Sears owns. With such vast systems, Junk expects growing pains and a learning curve with remote diagnostics as his IS group learns how the new Windows NT servers will handle a core application for the company. But he also expects NCs to be easier to administer and maintain.

Gen. Donald Walker, CIO of United Services Automobile Association (USAA) in San Antonio, has an opinion that falls squarely on the fence. The insurance and financial services company has not yet migrated to NCs, but Walker has set up his network to account for the possible advent of NCs by adding bandwidth strength. Last year, the company recabled its main campus and regional offices with fiber optics and upgraded its network to an ATM gigabit backbone (see "NC: The New Wild Frontier?" *CIO*, June 1, 1997). "We're very, very upbeat about what NCs can do for us," Walker says.

Walker is trying out thin clients in a laboratory setting. USAA is currently using 10 NCs in a model office laboratory, which Walker describes as a controlled environment. Only certain calls are routed in for service reps staffing the NCs. IS then monitors how quickly those calls are handled. Walker says USAA is determining whether the NCs measure up to the PCs currently in use in terms of functionality and speed in handling customers as well as whether NCs are compatible with the company's network. However, Walker says he is concerned that testing 10 NCs will not be a good measure of scalability. "The network might work for 10, but will it work for 10,000?" Walker wonders. He says USAA may have to conduct a larger laboratory testing or even a pilot in the future. Walker has appointed a technology watch group of 10 IS staffers to keep tabs on technology developments, including NCs. "We're pretty bullish on the potential [of NCs]," Walker says. "I believe there will be a mix of NCs and PCs, but at this point I could go either way. We just need more information about costs and performance in our environment."

To make a definitive decision, CIOs will have to consider the trade-offs between the lower functionality of NCs and their lower maintenance costs and the reliability and proven track record of PCs. While weighing the promised cost savings of NCs, companies must evaluate the nature of the work performed and the corporate culture into which the new machines will be introduced. In the meantime, vendors will hammer out standards. Waiting might have gotten Hamlet into trouble, but for a CIO in the NC game, waiting for NCs to match their hype and early promise might prove to be the most effective strategy. CIO

Senior Writer Mindy Blodgett can be reached at mblodgett@cio.com.

GETS THE DIRT OUT!

CLEANS
and
CONDITIONS
while it
PROTECTS.

UNINTERRUPTIBLE POWER SOLUTIONS For an on-line UPS that provides clean, consistent power, pick up a Powerware® Prestige from Exide Electronics. Its unique design protects critical workstations and network devices. Along with OnliNet® power management software, it enables sophisticated network communication and control. And its wide input voltage range saves batteries for when you need them—during an extended power outage. So accept no substitutes, get genuine power protection today.

Within the Americas: 1-800-554-3448, ext. 762, or +1-919-870-3403

Fax: +1-919-870-3411, Internet: http://www.exide.com, E-mail: info@exide.com

IPM® DATATRAX® LORTEC® LECTRO® POWERWARE® FPS® DELTEC®

EXIDE ELECTRONICS
Strategic Power Management™

© 1996 Exide Electronics Group, Inc. All rights reserved. ®,™—a trademark of Exide Electronics Group, Inc.

©1998, JBA International. All rights reserved.
Windows NT is a registered trademark of Microsoft Corporation. Other trademarks are the property of their respective companies.

Nothing should hold you back.

You need to speed past barriers. Smash through obstacles. Adapt. Grow. Enter JBA International. We're already familiar with your industry landscape, so we can quickly get software in your hands that fits the changing shape of your business. It's enterprise resource planning that fits your vision. So you have the flexibility to plan ahead. Tie processes together. Do more, in less time. And when change cuts you off (and it will), modifying our component-based technology is as easy as shifting into high gear. JBA sees your big picture, helping you get where you're going, faster. No matter what's around the corner.

JBA®

➤ 800-JBA-INTL WWW.JBAINTL.COM ◄

JBA puts you on Easy Street with ERP solutions for Windows NT, AS/400 and other platforms.

Contact us for the free ERP guide, "Integrating The Enterprise."

License to Kn

An Aston Martin DB5 and a Walther PPK might have been the tools of choice for Bond—James Bond—but today's intelligence agent can teach a corporate counterpart to be more effective with a database and a search engine

BY JAY FINEGAN

SIPPING A DIET SODA IN HIS roomy executive office, John Dahms discourses on the difference between your company and his. If you've read your share of airline rack bestsellers, you know his place as The Company, the Central Intelligence Agency. Working from headquarters in Langley, Va., the 49-year-old Dahms has been the agency's associate deputy director for administration in information services and CIO since 1993. But the difference he describes between his company and yours may not be as great as you think.

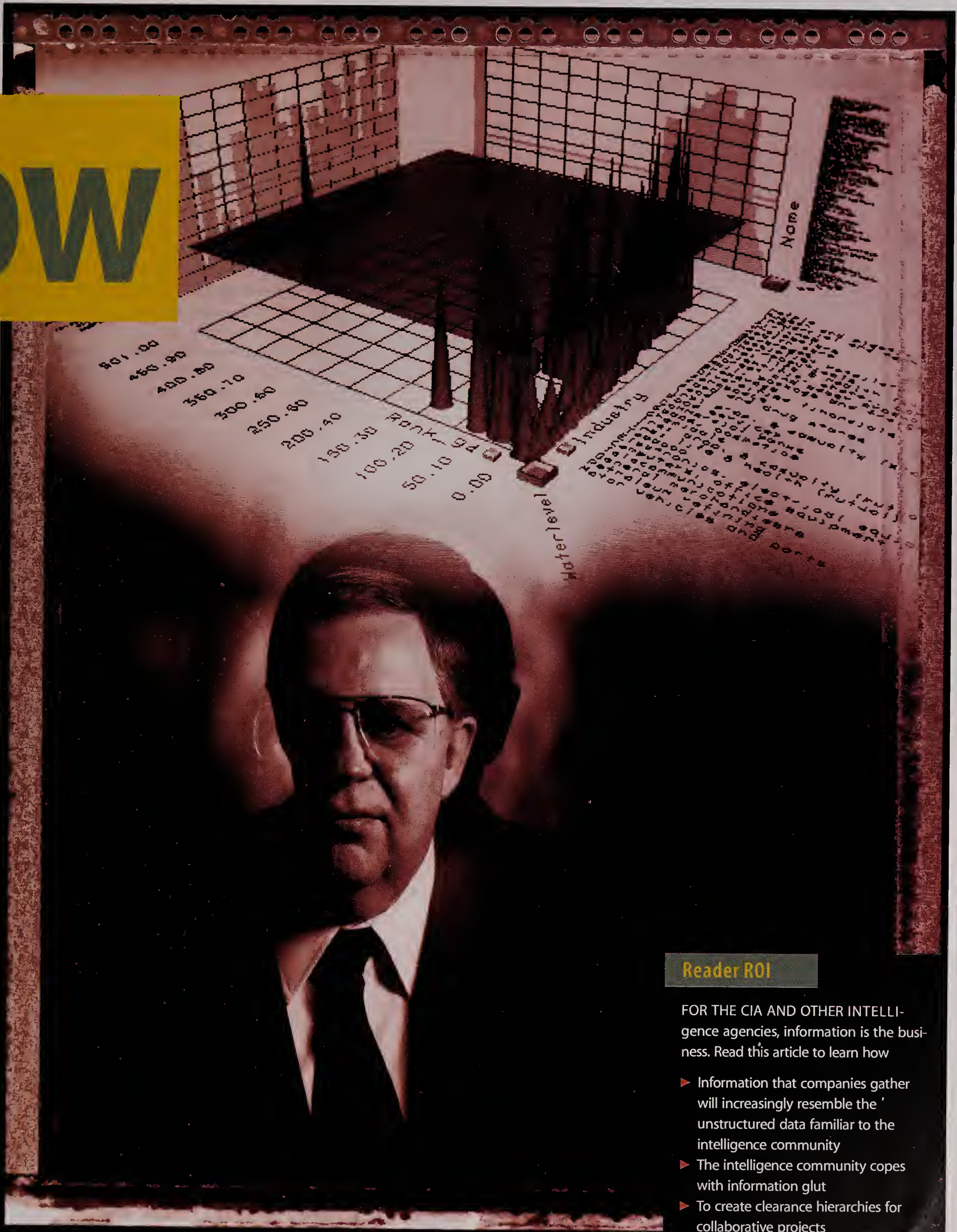
Sure, the CIA is a secret spy operation, and chances are you haven't microfilmed your competitors' files even once this year, but Dahms's point involves two types of information, structured and unstructured. The first is more familiar to the business world; the second is more familiar to the intelligence community. Dahms predicts private sector companies increasingly will have to contend with the same tough processing issues that the CIA has dealt with for years, and the smart information executive needs to get the techniques down now.

In the private sector, Dahms explains, most information is organized in relational tables. A bank-card company, for example, works with transaction data—the store, the amount, the date, the cardholder. "[The data is] all very structured and operated on in a very structured way," he says. "The tools to manage and mine those sorts of databases are well developed."

TOP SECRET

PHOTOGRAPHY BY WALTER CALAHAN

OW



The CIO of the CIA, John Dahms, predicts industry will suffer an onslaught of unstructured data.

Reader ROI

FOR THE CIA AND OTHER INTELLIGENCE agencies, information is the business. Read this article to learn how

- Information that companies gather will increasingly resemble the unstructured data familiar to the intelligence community
- The intelligence community copes with information glut
- To create clearance hierarchies for collaborative projects

Susan Gordon directs the application of advanced analytic tools for the CIA.

Intelligence processing of unstructured data is messier. The U.S. intelligence community deals daily with information that not only comes from a variety of media—texts, video, radio, journalism—but also arrives in a Babel of languages. At the CIA, information comes from a variety of sources, including reports filed by agents in the field, satellite photography and reams of "open source" material—publications, studies, wire feeds and documents pulled from the Internet. Somehow, all that information has to be converted to knowledge by the agency's many analysts, then sent up the chain to the CIA's ultimate customers—the president, the Cabinet, law enforcement agencies and war fighters at the Pentagon.

With precision push, we can electronically send selected data to the knowledge workers.

Competitive Intelligence

The increasingly international nature of business and the Internet boom are blurring the distinction between the CIA's wide-open style of information accrual and analysis and the more orderly style of private industry. Companies are now targeting a new type of information goal: competitive intelligence. As the marketplace swells to global dimensions, companies increasingly need to understand the intricacies of other countries, including political stability, local economics and, in some emerging markets, the dynamics of terrorism or organized crime. That kind of information seldom takes a structured form.

And you can't obtain the information by granting all your executive vice presidents double-0 ratings. Corporations do not have the same intelligence-gathering assets as the CIA, with its network of covert agents, nor do they have access to "denied information"—the classified stuff that might, for example, make all the difference in determining if an emerging market will be hospitable or hostile to business. Nevertheless, companies can certainly employ the methods the pros use to collect the free data available in SEC filings, on the public registries of companies over the Internet, and in newspapers and trade press. In an age of information glut, finding data, unstructured or otherwise, isn't the hard part. But locating the specific information you need, when you need it—that's the trick. Luckily, some good search engines for unstructured data already exist, such as AltaVista as a Web search tool.

Haystacks and Needles

When the Cold War was going strong and information technology was primitive, the CIA had no choice but to write its own computer code. "We had this unique requirement to handle massive amounts of text data, and doing so was expensive and very customized," Dahms says. "But if you look at the search engines coming out now, with their ability to do Boolean and relevance searches on huge databases, [you will find that] a lot of the underlying technology came from research we sponsored. We've always had partners in industry, and we've always shared our needs with them, and in many cases they've leveraged technology developed for us into commercial products."

Today, analysts at the CIA and its sister agencies use many of those public domain and commercially available search engines in combination with customized code. But as companies will discover once they begin to gather competitive intelligence, commercial products can only do so much with unstructured input. "Technology is not yet good enough to make sense of all this data coming in," says Susan M. Gordon, director of the CIA's Office of Advanced Analytic Tools, whose job involves figuring out how best to use emerging technologies. "We're still at the point where a person has to think of the right construction of a query, or a way to array the data, to yield results." It's one thing to gather and categorize data; it's quite another to make sense—or knowledge—out of it.

Unfortunately, there's no shortcut to mastering the fine points of analysis work, to hear its practitioners tell it. "You cannot hire a smart MIT or Stanford grad who comes with that experience," says one former analyst. "It has to be learned on the job."

Budget Pressure

Vodka martinis (shaken, not stirred) and tins of beluga caviar add up quickly, but these days even James Bond's expense account is limited to nothing more expensive than a grilled chicken salad. "I have the same budget pressures as any CIO in industry," Dahms says. "We're trying to drive costs down as low as we can." Dahms believes that products procured off the shelf are easier to maintain. Congress started to curtail intelligence spending after the fall of the Berlin Wall in late 1989 and the subsequent collapse of the Soviet Union. With the commonly shared political perception that the Cold War had ended, there was consensus that the intelligence business, which had traditionally pioneered IT advances, could now find some of the hottest products on the outside.

To further the cause of black ink, many companies are abandoning home-grown software development. Last fall, Michael McGrath, then a Defense Department assistant deputy undersecretary, relayed to an audience of intelligence techies some recommendations based on findings of the Dual-use Research Panel of the Defense Advanced Research Projects Agency (DARPA): For budgeting purposes, in a make-or-buy decision, make should be the last resort and buy should be the rule. Furthermore, he said, if no off-the-shelf product adequately meets a concept-based need, try to change the concept to accommodate existing commercial solutions. Or introduce a third option, the codevelopment of dual-use technologies or products through a joint effort with industry, added McGrath, who has since become division vice president for government-industry program development at Princeton, N.J.-based Sarnoff Corp.

That's a sharp departure in procedure from the days of Ronald Reagan and the "evil empire," when defense and intelligence agencies fought the Cold War on their own terms with a hefty share of the national wealth. The change

Picture This

A Picture Is Worth a Thousand Screens

INTELLIGENCE ORGANIZATIONS and many private sector companies are collecting and storing more data than analysts can effectively manage, says Dave Shuping, Visual Decisions Inc.'s regional sales manager for the Washington, D.C., area. A query can return thousands of records, displayed as rows and columns of numbers and text. But data visualization captures the same information and uses colors, geometric objects and animation to create graphical "landscapes." The technology reaches into virtually any type of database with standard interfaces and brings the information alive—making trends and patterns easier to spot. One 3-D screen can handle the equivalent of 500 screens of numerical or text data.

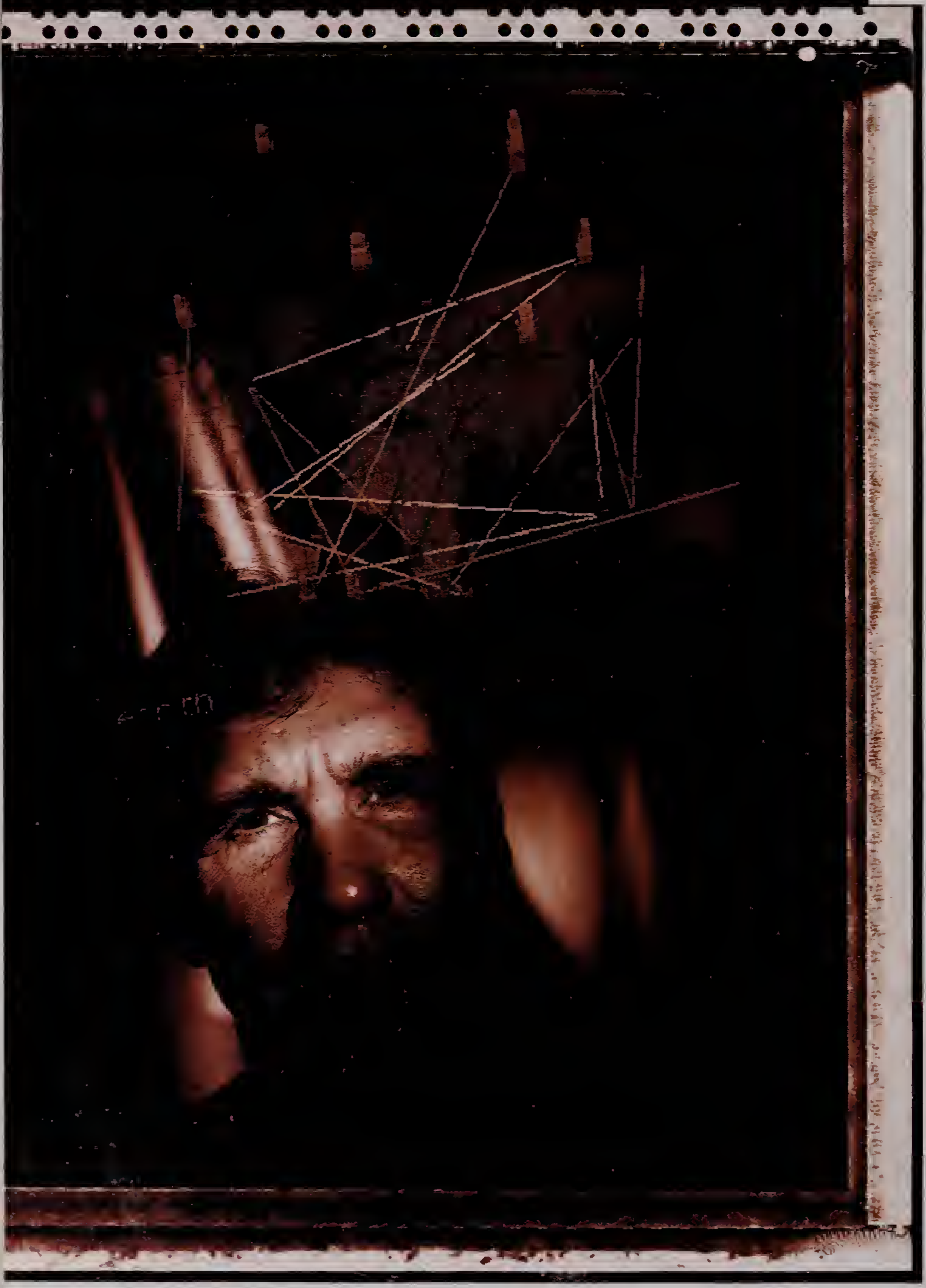
On the private side, NationsBank Corp., based in Charlotte, N.C., has been using another VDI 3-D data visualization toolset, Discovery for Developers, for two years, and Susan Osterfelt, senior vice president in the company's Strategic Technology Group, terms it a breakthrough. "Where it really helps you is in gaining insight from information," she says. "Visualization makes data more comprehensible. With a numerical format, you just can't see the relationships between variables the way you can with 3-D. There's nothing else on the market like it," says Osterfelt. *–J. Finegan*

Susan Osterfelt of NationsBank finds insight in 3-D data.

in financial climate was evident at the Washington, D.C.-based Advanced Information Processing and Analysis Steering Group's (AIPASG's) biggest production, an annual three-day symposium where vendors show off their latest tools to the intelligence community market. Last year's meeting attracted 50 exhibitors; the theme of many of the vendor exhibits was how to cope with information overload.

"Intelligence analysts are swamped with data," says Mickey Byrne, past chairman of the AIPASG and now national account manager for government solutions with Lucent Technologies Inc. in Silver Spring, Md. "Having been an intelligence analyst, I can tell you the information volume is just mind-boggling," he says. "There were studies that found that analysts can easily spend 80 percent of their time just fiddling around with monitoring or performing activities such as gathering and sorting data that don't involve interpretation and analysis." Byrne would like to see information technology reduce that percentage.

Former analyst Mickey Byrne says analysts need the time to interpret data, not shuffle it.



Precision Push

Even with the widespread infusion of shrink-wrapped technologies like visual representation of data (see "Picture This," Page 49), intelligence agencies still rely on their own technical staffs to provide mission-critical capabilities unavailable elsewhere.

Consider the thorny issue of information distribution based on hierarchies of clearance. In the business world, multilevel information-sharing problems are endemic. Managers might want to keep some data, such as personnel health records, close to the vest, while giving other information, such as a knowledge database, a wider audience. Ready-made solutions for clearance schemes are scarce, however.

The CIA has filled in the gap with what Dahms calls a precision dissemination system, or "precision push," a system developed in-house and based on the need to know. In the old days, he says, people would read incoming material, decide who would get it and make some copies that went through the mail room. Now distribution happens electronically, speeding the process considerably and not-so-incidentally enhancing security by nearly eliminating paper copies that might go astray.

"As a piece of information comes in the door, human gatekeepers make a decision based on content to determine which of the several thousand analysts really need to see it," he says. "The foundation of any [secure] information dissemination system is authentication. If you get on a computer [on the network], we want to be absolutely sure who you are because, based on your identity, I will provide you rights to certain data. Those rights could be based on your organization, or your job or some unique assignment. With precision push, we can electronically send selected data to the knowledge workers. That way, they're not inundated with too much information, but they don't miss anything important."

At least in this regard, the CIA is ahead of the private sector's technology curve. But maybe not for long. Dahms expects to see commercial versions emerge over the next few years. "If you read the trade press," he says, "push technology is a big research thrust internationally. There's so much information out there, it can be confusing to wade through, but you want to be alerted if anything happens in an area you are following. Just as lawyers want to be alerted about filings in a specific area, intelligence analysts want to be kept up-to-date."

Poor James. It seems his future is likely to take him from those exotic beaches and place him in an office cube before a softly glowing monitor.

Jay Finegan, a business and technology writer based in North Yarmouth, Maine, can be reached at IncFinegan@aol.com.

E-MAIL GLITCHES SENDING YOU

Easy does it. OK…now gently place the keyboard back down on your desk. Sun™ Internet Mail Server™ Software offers an ultrareliable, interoperable mail system that works seamlessly across your global network–eliminating the aggravation of lost or unreadable messages. By providing an uninterrupted flow of communication, you'll be able to grow your business without limits. But not to worry, our mail server software is scalable enough to grow right along with it. What's more, you're covered by Sun's consulting, education and support services. So relax, take a deep breath, and visit our Web site at www.sun.com/sims/ or call 800-786-7638 Option 1 for more information. THE NETWORK IS THE COMPUTER.™

Network
Software
Solutions

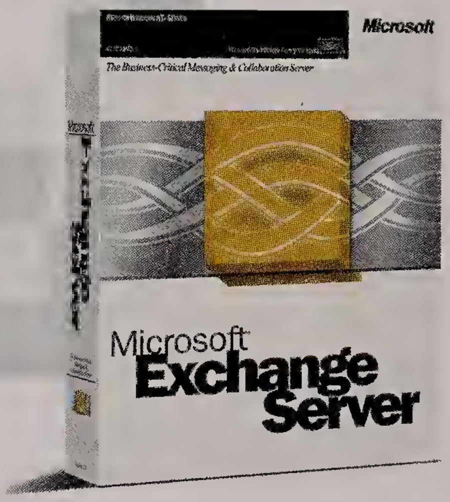
Sun
microsystems

OVER THE EDGE?

©1997 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, SunSoft, the Sun Logo, Sun Internet Mail Server and The Network Is The Computer are trademarks of Sun Microsystems, Inc. in the United States and other countries.

Windows NT
Exchange Server
SQL
Site
Systems Management
Proxy
SNA

Now there's a messaging for business


Microsoft
The Business-Critical Messaging & Collaboration Server
Microsoft Exchange Server

platform giants of all sizes.

Introducing Microsoft® Exchange Server 5.5, with new features that make it, now more than ever, the right messaging platform for enterprises that know communication and collaboration are mission-critical. Leading the list is an unlimited message store. Now, the number of seats you support on a single server, and the amount of data you host, are limited only by your hardware. Then there's interoperability. Exchange Server 5.5 has built-in connectors for easy co-existence and file sharing with other mail systems. And to provide a rich user experience that includes cross-platform calendaring, Microsoft Outlook,™ the messaging and collaboration client, now runs on a range of desktops—whether they're talking Win32,® Win16 or Macintosh.®

The result? You can standardize messaging across your diverse computing environment. Today, leadership is measured by an organization's communication reach, not just its numbers. That's why Microsoft Exchange Server 5.5—with its scalability, interoperability and consistent user experience—is the right messaging platform for any organization that thinks big.

Go to the Web today for your Microsoft Exchange Server 5.5 evaluation kit.

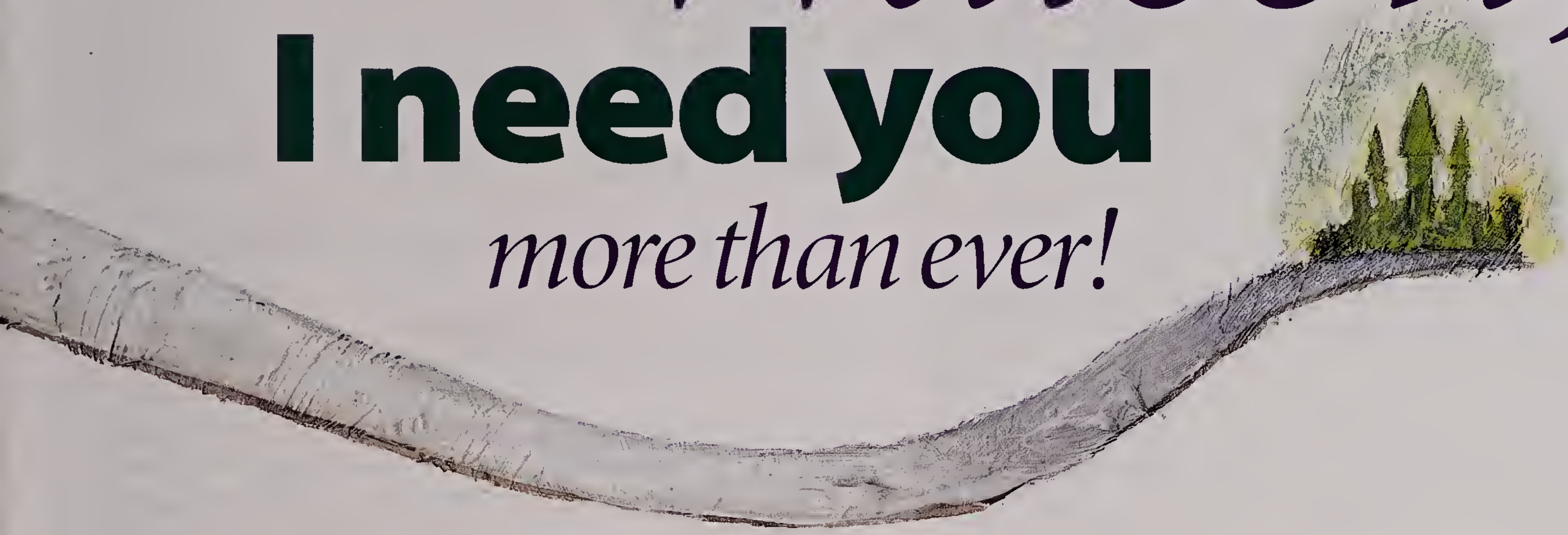
http://www.microsoft.com/exchange/5.5/

Where do you want to go today?® **Microsoft**

© 1998 Microsoft Corporation. All rights reserved. Microsoft, Outlook, *Where do you want to go today?* and Win32 are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Macintosh is a registered trademark of Apple Computer, Inc.

Are we there yet
Are we there yet
Are we there yet

Come here, *Watson,* I need you *more than ever!*



The road through the forest of telecom providers is neither straight nor easy, but here is the map to the best deal

BY CYNTHIA BOURNELLIS

A driver in the middle of nowhere ponders which way to go. The road is unmarked. The terrain appears rough. Which way should he turn?

A CIO, like that driver at an unmarked intersection, must look in every direction before deciding which route to take in the quest for telecom services. And the CIO at the wheel had better make the decision quickly. In the back seat a bunch of cranky kids who look a lot like business executives are screaming, "Are we there yet?"

Before stepping on the gas or turning the wheel, an information executive faced with the job of procuring telecom services needs to do three things: determine the enterprise's strategic direction, guarantee that someone in the IT shop knows enough about telecom technology to make a savvy decision and divide the enterprise's telecom needs in terms of voice and data.

Without knowing what the company envisions its strategic destination to be, it will be hard for anyone to negotiate with suppliers over the long term, says Robert M. Rubin, vice president and CIO of Elf Atochem North America Inc., a $2 billion chemical company based in Philadelphia. (Rubin also serves on *CIO*'s board of advisors.) Elf Atochem needs to communicate quickly and efficiently with its customers around the world. To fulfill that strategic goal, Rubin chose to install an EDI platform in addition to SAP. He knew enough to reject high-speed technology such as cable modems. Instead, he chose frame relay to carry data and T1 lines to carry voice. The two technologies proved adequate to their respective tasks. "Our transmission volumes didn't warrant the use of higher-bandwidth technologies," Rubin explains.

Reader ROI

AS TELECOMMUNICATIONS SERVICES CONVERGE, service providers that are consolidating may not always be the best bet. Before stepping out to shop, you need to learn how to

- ► Separate voice needs from data needs
- ► Find the right service provider
- ► Negotiate the best deal

ILLUSTRATION BY ANTONIO CANGEMI

Telebabble *made* intelligible

ATM (Asynchronous Transfer Mode) A fast cell-switched technology that combines circuit-switching and packet-switching technologies. It allocates bandwidth on demand and is suitable for voice, video and data services at very fast speeds.

Category 3 Cabling and cabling components designed to transmit 16MHz of communications. Used for voice and data on a LAN, traffic is 10Mbps. Used most commonly for voice telephone cabling.

Category 5 Transmits 100MHz of voice and data over LANs.

DSL (Digital Subscriber Line) Operated at the Basic Rate Interface with two 64Kbps circuit-switched channels and one 16-kilobit packet-switched channel, DSL can carry voice and data at the same time and in both directions.

FDDI (Fiber Distributed Data Interface) A 100Mbps fiber-optic LAN that uses a counterrotating token ring topology. FDDI rings may use up to 200 kilometers of optical fiber, or they may deploy twisted copper pairs for short hops.

Fiber Optics Made of glass, fiber-optic cables carry digital signals in the form of modulated light on strands of fiber over long distances. Fiber-optic cables carry much more information than copper telephone lines.

Frame Relay A form of packet switching that relies on high-quality phone lines to minimize errors. It does check errors but does not correct them in a network. Frame relay handles high-speed intermittent bursts of data over wide area networks. With frame relay, a pool of bandwidth is made instantly available to any of the concurrent data sessions sharing the access circuit whenever a burst of data occurs. Frame relay is reported to offer higher performance at lower cost than traditional leased-line services.

ISDN (Integrated Services Digital Network) A telecom service that comes in two flavors. The first is BRI, or basic rate interface, which is 144,000 bits per second and designed for desktop computers. It supports videoconferencing. The second is PRI, or primary rate interface, which is 1,544,000 bits per second and is designed for telephone switches, computer telephony and voice processing systems.

PBX (Private Branch Exchange) A small version of the phone company's large central switching office and is owned by the user.

POTs (Plain Old Telephone lines) Copper telephone lines.

PTT (Post Telephone & Telegraph administration) PTTs are usually controlled by their governments and provide telephone and telecommunications services in most foreign countries.

SONET (Synchronous Optical Network) A family of fiber-optic transmission rates ranging from 51.84Mbps to 13.22Gbps. SONET transports many different signals with different capacities and allows the interworking of transmission products from multiple vendors.

SOURCE: NEWTON'S TELECOM DICTIONARY, 11TH EDITION BY HARRY NEWTON, FLATIRON PUBLISHING INC., 1996

While Rubin may be knowledgeable enough to put all the pieces together, many CIOs feel as though they are drinking from a fire hose of technical information. Do they need to be technical gurus to buy telecom services? "I may not be an expert when it comes to talking about the inner workings of some box, but I make sure someone on my staff is," says Jonathan C. Fornaci, vice president and chief technology and information officer at Genstar Container Corp., a San Francisco-based General Electric Capital company whose core business is leasing marine containers worldwide.

On the other hand, being a technical savant can sometimes be a disadvantage, according to Tom Nolle, president of CIMI Corp., a technology assessment firm in Voorhees, N.J. "If you try to get too technical in selecting carrier services, you accept responsibility for whatever meets that specification," says Nolle. He recommends that information executives, when talking to vendors, avoid technospeak and focus on managerial considerations.

Businesses *last year left $34 billion on the table* **because** *they* **failed** *to get competitive* **bids**.

The third step in choosing a route to telecom procurement is to divide business functions into voice and data. That discrimination requires familiarity with the fine points of a company's service needs. "Keep drilling down because pricing is predicated on those details," says Kenneth G. McGee, vice president and research director at Gartner Group Inc., a research firm in Stamford, Conn.

Search for Service

Once a destination is chosen, the problem of selecting a road remains. Some consultants recommend sticking with one telecommunications carrier for all needs, while others suggest bringing in multiple providers. Nolle suggests the single supplier route. "You already know their performance, so getting into bed with them some more won't hurt," he says.

But for large global companies, the single supplier route is not always the road most traveled. With a network that has connections into 31 countries, New York City-based Ernst & Young International Ltd., for example, allocates its telecom and data services through Equant Network Services and GlobalOne—the consortium of Sprint Communications Co. LP, Deutsche Telekom and France Telecom. Equant provides Ernst & Young with an international dial-in service that lets all its employees who frequently travel call their offices regardless of where they are. GlobalOne installs and manages Ernst & Young's worldwide network connections. Meanwhile, Ernst & Young manages its higher-level functions, such as the Lotus Notes replication service as well as certain aspects of the EY/Link network management. "For those functions, we need people who are knowledgeable about our organization and our applications," says Malcolm Collingwood, director of international communications services at Ernst & Young International in New York.

Bundling services with one provider clearly isn't for everyone. All those eggs in a single basket leaves some people nervous. "[Bundling services] is good to the extent that it doesn't affect the reliability of the service," says Jerry Smith, senior vice president of network services at UMB Bank in Kansas City, Mo. "[But] if I bundle with one vendor and its service goes down, it could affect our [entire] enterprise." Last summer, UMB installed a wide area network, using frame relay to link all facilities to the main branch in Kansas City. UMB divides its telecom needs among three providers: AT&T Corp. to manage most of its data needs, Sprint to manage its voice service and Netcom On-Line Communications Services Inc., based in San Jose, Calif., for its Internet access.

The three-way split was made over the course of two years. It was cheaper to go three ways, says Smith, who adds that the contracts were set before he joined the bank. He said the decision to go with a separate Internet service provider was based on Netcom's reputation. "At that time, telecom carriers could not provide stable Internet connectivity, and Netcom was one of the first big players." Smith says that when the time comes, he may allocate most of UMB's telecom needs to a primary telecom provider and use another vendor for services such as bandwidth on demand.

Outsource It?

While many companies have always used the major telecommunications carriers to manage their voice networks, more and more are also outsourcing their data needs so that they can focus on their core business strategies.

In addition to voice, the major telecommunications carriers and local Bell operators offer data services ranging from e-mail to Web site hosting and development to Internet access to wireless communications. Computer companies such as IBM Corp., Hewlett-Packard Co. and Amdahl Corp. also have telecom outsourcing businesses, and a number of reliable systems integrators, such as Electronic Data Systems Corp. in Plano, Texas, offer telecom services. All that competition puts the buyers in a comfortable position. "If I have a circuit with AT&T and there is a hardware failure that attaches to that circuit, IBM handles it," says Smith. IBM manages UMB's hardware support for more than 145 remote branches in the Midwest.

Even the utility companies are getting into the act. Norweb Communications of Great Britain, a business unit of United Utilities PLC, is working with Northern Telecom, based in Richardson, Texas, on technology that will allow data to be transmitted over electric power lines into homes at speeds of more than 1Mbps. Because electric lines are ubiquitous, this is an attractive option for businesses that endorse telecommuting. Test trials were completed in the United Kingdom in October 1997, with trials slated for the U.S. market sometime in 1998.

For Houston-based Lyondell Petrochemical Co., expanding business drove the need to outsource. The $5 billion petrochemical company had previously charged two people with managing eight sites with 2,700 connections on Lyondell's own network "Managing that large an infrastructure with two people was unheard of," says Sanjay Chadha, manager of technology planning and evaluations at Lyondell. Rather than creating an army of people in-house, Lyondell offloaded various processes to a number of partners. Lyondell uses St. Louis, Mo.-based Southwestern Bell to install and manage its point-to-point connections and is working with AT&T on ways to access AT&T's private network for global growth. PSINet Inc., headquartered in Herndon, Va., provides Lyondell with local Internet access through a local Internet service provider (ISP) in Texas. Multiple partners equal special treatment, says Chadha. "Having Southwestern Bell do only our wiring frees them up to act quickly on short notice," he says. The carrier was able to work with Lyondell on designing a custom high-speed fiber-distributed data interface (FDDI) network across Lyondell's offices in Houston that could connect to Lyondell's vendors, many of which have FDDI networks.

Final Considerations

Before signing on the dotted line, there are some points to raise with potential telecom partners.

- **Speed.** "If it's going to take six months to implement a ma-

Picture, Picture on the Wall

Videoconferencing will put new stress on networks already gasping for bandwidth

THE QUALITY OF VIDEOCONFERENCING still needs improvement: It requires lots of bandwidth, and movements tend to appear jerky. Nevertheless, many customers will continue to use videoconferencing for niche applications such as employee training.

Companies such as J.P. Morgan & Co. Inc. in New York City have aggressive plans to broaden their use of videoconferencing. J.P. Morgan itself plans to use it this year to sell its products over the Internet.

When considering videoconferencing over the Internet, ask yourself if it will truly bring down your telecom costs and if it will measure up in terms of quality, says Chris Landes, an analyst at TeleChoice Inc., a consulting firm based in Verona, N.J. Landes says prices start at $200 per conference. Volume discounts depend on the frequency of use and the value an account has for a provider. In contrast, audioconferencing—a good, old reliable speaker phone—is less expensive and can be set up in minutes.

–C. Bournellis

jor initiative in a certain part of the world, the need for that initiative could have come and gone by then," says Collingwood.

■ **Costs.** Unlike for cars, there is no Blue Book when it comes to buying telecom services. Therefore, talk to providers about their cost structures. "They have a lot of room to negotiate," says Tod Dixon, former vice president of information technology with Northeast Utilities Electrical System in Berlin, Conn. The cost for a carrier to add a user to its service, assuming the carrier has spare capacity, is negligible, according to Dixon. Keep in mind, too, that the price of networking hardware is dropping as telecommunications carriers force hardware vendors to cut prices due to increased Internet traffic. Last fall saw the start of aggressive price cuts on router and switch products from Cisco Systems Inc., 3Com Corp., Bay Networks Inc. and Hewlett-Packard. The driver behind the decline in hardware expense is the rise of Internet volume. "Bandwidth needs will double in two years, and we are continually working to lower equipment costs with higher-density ASICs," says Alex Mendez, vice president and general manager of the multiservice access business unit at Cisco in San Jose, Calif. (ASICs are application-specific integrated circuits used for products such as video machines, microwave ovens and security alarms.) "In 1998, the price per port of Fast Ethernet switches will be about $200," Mendez says. The price in 1997, according to Dataquest, a San Jose, Calif.-based high-tech research company, was $530.

The **jury's** *still out when it comes to the issue of* **long**- *or* **short**-*term* **commitments** *with* **carriers**.

■ **Cutting-Edge Technology.** Biting the bullet now to install fiber circuits can be a cost-effective solution in the long run; fiber carries more information than copper.

■ **Provider's Growth Plans.** Ask for a telecom provider's technology road map. A CIO should partner with a company that will not only help scale the customer's network but has plans to grow its own. Pacific Bell, for example, has a fiber-optic backbone designed to grow with its customers' needs, according to Jim Pflaging, president of Pacific Bell Network Integration in Dublin, Calif. The company is also working harder to deploy ISDN and frame relay.

Telecom Shakeout

As this article went to press, the telecommunications industry was in global upheaval. For an update on the mergers and acquisitions shakeout among MCI, British Telecommunications PLC and WorldCom Inc., visit *www.cio.com/updates.*

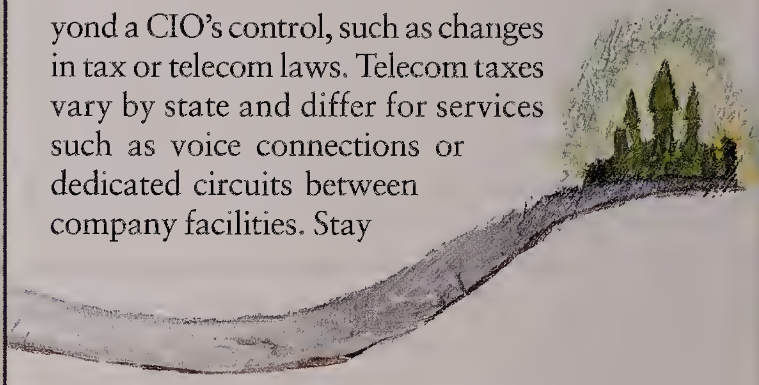
■ **Global Support.** When doing business beyond the U.S. border, make sure the telecom provider has carriers in key countries and a strategy to offer service in developing countries.

Contract Negotiations

■ **Get competitive bids.** It may seem obvious, but according to Boston-based Aberdeen Group, businesses last year left $34 billion on the table because they failed to do so. Competitive bids are crucial even when old contracts are up for renewal. Gartner's McGee says the number of times a current carrier is willing to beat its original price will shock most CIOs. However, for some CIOs price isn't everything. Some providers are making guarantees of service. Since data has become part of the telecom services game, carriers are scurrying to make a difference when it comes to service agreements. For example, MCI Communications Corp. plans to offer service guarantees for T3, promising to keep the lines available 99.9 percent of the time, according to Traver Kennedy, managing director of telecom research for Aberdeen Group. If the service goes down for more than one minute in a given month, MCI claims it will cut the bill in half.

The jury's still out when it comes to the issue of long- or short-term commitments with carriers. Long-term contracts always seem more cost-effective, but one reason for thinking twice about them is consolidation, a trend that will continue among service providers and telecom carriers. "If the carrier you are dealing with gets acquired by more than 25 percent, you should be able to invoke an escape clause," says Eric Paulak, a research director at Gartner Group. The clause should state that within the first six months of the acquisition, the customer has the option to reevaluate or quit the contract without penalties.

■ **Include a reopener.** If a long-term contract is in order, this allows for renegotiation in certain areas, like cost, as the price of communications continues to drop. For example, Providence, R.I.-based Textron Inc., with businesses in aircraft, automotive, industrial and finance, has an evergreen clause in its 10-year agreement with AT&T Solutions, which manages its multivendor telecom environment. The clause allows Textron to reevaluate its contract every three years. This way, explains Textron CIO William B. Gault, Textron is covered in the event its needs or AT&T's business strategies change. "I'm not sure in 10 years what our telecommunications requirements will be," he adds. In addition, a reopener will allow for renegotiations when it comes to factors beyond a CIO's control, such as changes in tax or telecom laws. Telecom taxes vary by state and differ for services such as voice connections or dedicated circuits between company facilities. Stay abreast of these changes and try to negotiate a discount in the event of a tax hike.



■ **Don't sign a nondisclosure clause.** Historically, carriers have had nondisclosures written into their contracts to hold customers to secrecy on pricing.

■ **Negotiate a level of control into the contract.** For example, a service such as automatic dialing should be configurable by the customer.

The bottom line for telecom procurement? Know your mission, know your needs, negotiate hard and always seek to make the best use of the carrier's capabilities. Then you may find the road that leads where you want to go. CIO

Cynthia Bournellis, a freelance writer based in San Jose, Calif., can be reached at cbournellis@cahners.com.

FRAME THIS...
[LCI offers frame relay to more countries than any other carrier.]
Take a good look at the frame relay service that'll make you look good: FramePlus℠ from LCI International.

Now you can send your company's data farther, and for less, because nobody offers frame relay to more countries than LCI International. Not AT&T. Not MCI. Not Sprint.

We've become America's fastest-growing major telecommunications company by treating customers right, with guaranteed rates, guaranteed performance, competitive pricing and the best web-based reporting tools in the industry. Plus, we're the first frame relay service to let users make network configuration changes in real time.

It's a Simple, Fair and Inexpensive℠ solution your company can count on.

See how good LCI can be. Call 1-800-LCI-6556.

LCI International®
Worldwide Telecommunications
www.lci.com

VOICE, DATA, FAX, INTERNET

SWITCHED & DEDICATED ACCESS

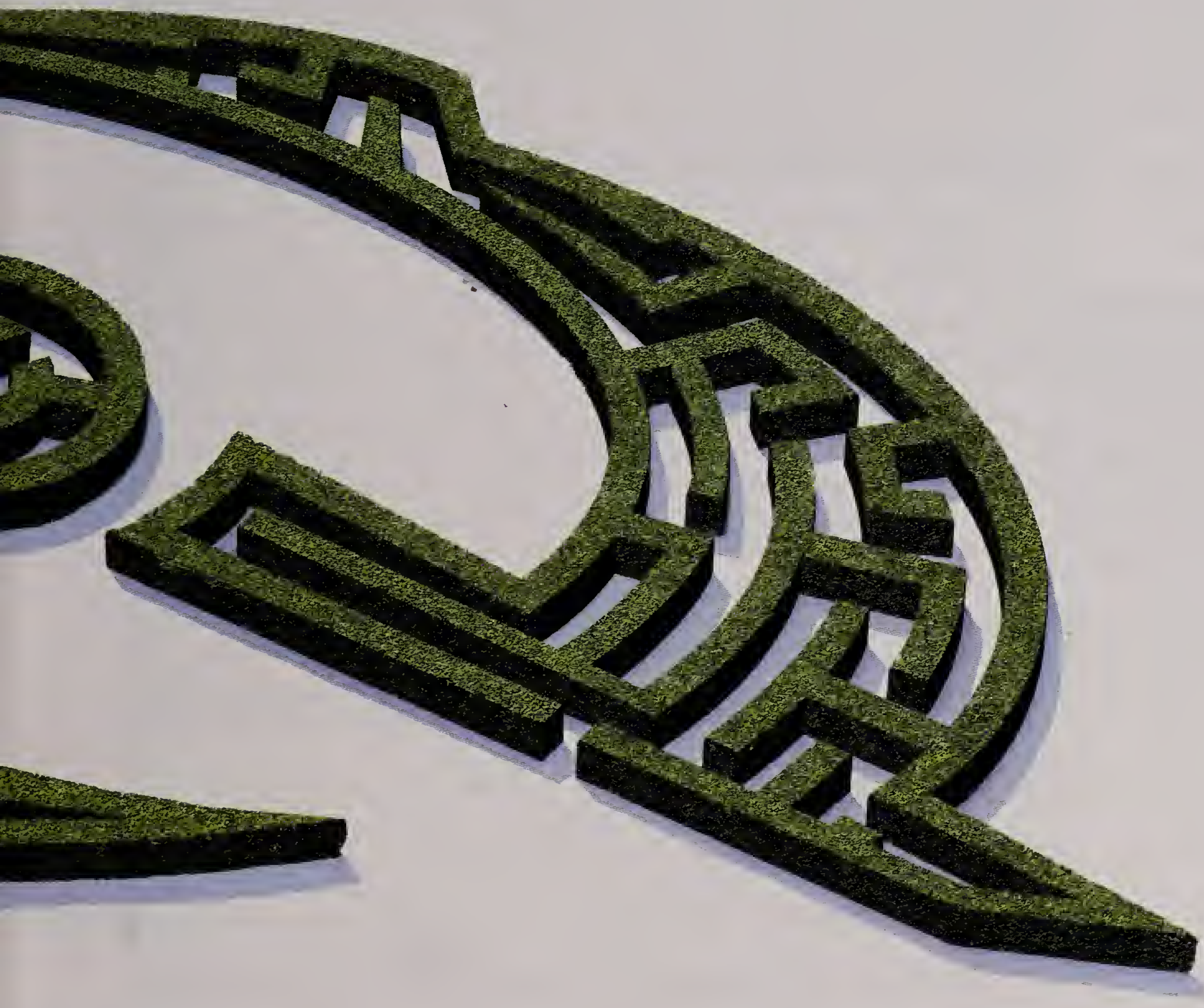
Confusing the hell out of

NOW THAT MCAFEE ASSOCIATES AND NETWORK GENERAL HAVE BECOME NETWORK ASSOCIATES,™ 80% OF

DOING THINGS LIKE MAKING IT SO HARD FOR OUTSIDERS TO GET IN, THEY GO STEAL SOMEONE ELSE'S SECRETS

©1998 Network Associates Inc.

hackers for fun and profit.



THE FORTUNE 100 DEPEND ON US FOR NETWORK SECURITY AND MANAGEMENT.

INSTEAD. CALL US AT 1-800-332-9966, DEPT. 0005, OR VISIT WWW.NAI.COM.

network
ASSOCIATES
Who's watching your network

Forrester View *Edited by Perry Glasser*

INDUSTRY ANALYSIS FROM THE RESEARCH COMMUNITY

Mergers, Acquisitions and Saving IT Dollars

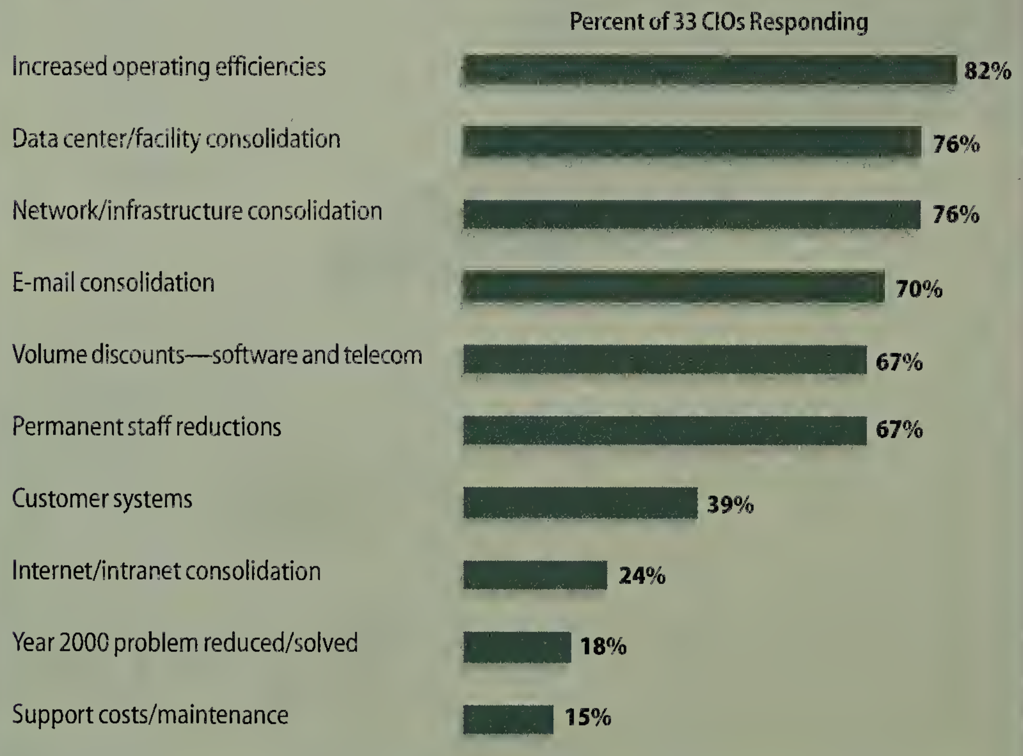
When your company announces it is about to join another, whether the new terrain will be filled with opportunities or land mines depends on the principles you establish

BY BOB CHATHAM

YOUR COMPANY HAS JUST bought a major competitor. The good news: You've been named CIO of the new company's unified IT organization. The bad news: It's your job to merge two unacquainted IT organizations and start producing the benefits that your CEO promised the financial community. If "postmerger synergy" is going to mean anything more than new golf partners, you need to make plans about personnel, technologies and managerial styles—fast.

Money Saved Is Money Earned

CIOs who have been through mergers identify the sources of savings



SOURCE: FORRESTER RESEARCH INC.

But before rushing headlong into meetings, assess your situation. Companies acquire or merge with other companies for specific business reasons that fall into four categories based on companies' relative sizes, industries and roles. For each type of merger, there is a distinct strategy for recasting the IS organizations and infrastructures. Each strategy addresses the degree to which managers should plan to merge personnel and architectures. In every case, postmerger or acquisition savings come from the elimination of system or workforce redundancies in the new business entity.

Four Merger Flavors

1. Marriage In corporate marriages, companies are of similar size and play similar roles in the same industry. The resulting company resembles both of the two previous organizations. The business objectives of corporate marriages include building market share and taking advantage of economies of scale. IS should merge workforces as well as infrastructures and application portfolios—there's no reason for redundancy in either area.

2. Acquisition The acquiring company is usually at least twice the size of the acquiree, and both companies are in the same industry and perform similar roles. The acquisition creates a larger version of the acquiring company. The IS group of the acquiring company should absorb the valued parts of the target company—its people and products—but replace the acquired IT infrastructure.

3. Vertical Integration The companies are in the same industry but perform different roles. Companies vertically integrate to make more money by closely linking different business processes—for example, a manufacturer connects its inventory system to a distributor's order fulfillment system. Since the two companies' IT

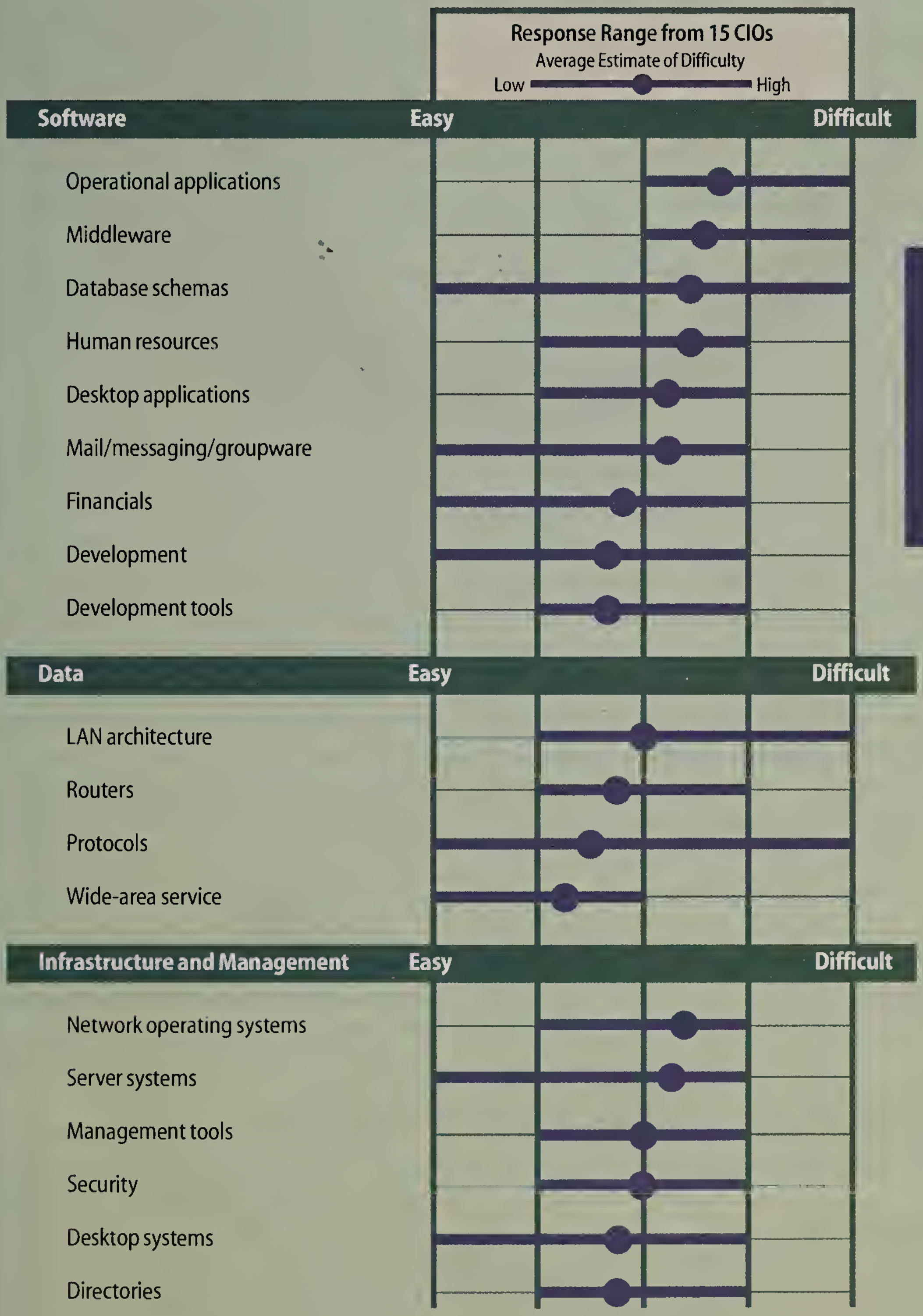
CORNER IMAGE BY CARL TREMBLAY

systems support different industry functions, there won't be much redundancy, except in administrative applications like e-mail, office suites, HR and financials. Ultimately, one IS group should be able to operate and maintain this linked set of systems with fewer people maintaining the combined systems.

4. Conglomeration In a conglomeration, companies are in different industries, and the acquired company often becomes a separate division within the resulting conglomerate. Companies form conglomerates to increase their aggregate economic stability or to help mature businesses fund growing businesses. The merged companies' IT systems are unlikely to warrant integration beyond a common, thin layer for administration of such ongoing operations as financials, groupware and software for HR. Separate IS groups should run these disparate systems, integrating them at the top level only via an IT council chaired by a corporate CIO.

Degree of Difficulty

Some of those promised postmerger synergies arising from systems integration are harder to achieve than others



SOURCE: FORRESTER RESEARCH INC.

General Principles for Merging

Since all four flavors of IT mergers require swift action in terms of vision, money, people and technology, executives should adhere to the following broad guidelines:

Be ruthless with technology. The siren song of combining best-of-breed technologies is a dangerous temptation that turns out to be illusory. CIOs most pleased with their IT integration processes have chosen one of the two merging companies' application portfolios in its entirety—and dumped all the other company's systems.

Be kind to people. An IT application doesn't feel bad if it has no place in the merged company, but a worker does. Be careful to characterize the merged organization as new and better than *both* of the previous IS groups—not the victory of one culture and staff over another.

On average, CIOs believe the two most difficult synergies to obtain are operational applications and network operating systems.

Spend money to save money. The average merger results in a 19 percent savings of the merged companies' combined IS budgets, but the new enterprise generally has to spend an additional 12 percent on one-time charges for new desktops, servers, network gear, severance packages and retention bonuses to save money (see "Money Saved Is Money Earned," Page 62).

Maximize premerger planning by seeking advance warning. The enemies of a smooth merger are time and the absence of clear direction. Only one-third of CIOs are party to the corporate merger decision process—the rest have to start planning after the merger announcement. Impress upon senior executives that postmerger is not the time to start planning the IT transition that should have been thought about in premerger considerations.

How to Combine Technologies

Though every merger or acquisition is undertaken for business reasons, chances are the first demand of the IS shop will be to ensure that systems stay up and that the planned efficiencies are realized. Although at first glance combining organizations seems to offer an opportunity to choose among diverse systems to find an optimal combination, the best-of-breed approach is a trap. A person might think winnowing the best systems from each of the premerger companies would produce an all-star portfolio; however, players on all-star teams don't always play well together. As one CIO put it, "Perhaps a Toyota's wheels don't belong on a Mercedes."

One way or another, make sure someone isn't underestimating the IS-related issues of a potential merger.

To maximize the new efficiencies offered by a merger or acquisition, strive to pick a single, intact technology suite from one of the premerger companies as the basis for the merged companies. When choosing the best technology suite for the merged organization, look for one that can support the postmerger business strategy, can grow, is year 2000 compliant, can migrate to an Internet computing model and is economical to maintain.

Exceptional Treatment

In the search for the best technology suite, evaluate exceptions to your methodology, but don't let exceptions drive the process. When truly immovable objects are met, the overall goal of selecting a single technology suite must occasionally yield to the higher goal of preserving value in the merger—typically when your customers, suppliers or business partners can't tolerate changes to a process or product. For example, incompatible manufacturing approaches may preclude manufacturing or enterprise resource planning (MRP/ERP) systems, just as regulatory requirements may interfere with some possibilities for redundancy elimination. Similarly, though purchasing processes for maintenance, repair and operations items like light bulbs could be consolidated, in the manufacturing sector the direct materials purchasing process for items integral to finished products tends to be industry- or function-specific. Because of that fact, those purchasing processes will resist consolidation.

Finally, it usually doesn't make sense to change underlying systems when IT is integral to the product, such as with insurance, which is pretty much a creature of the systems behind it. Rather than change the IT systems, a postmerger insurance company would be smarter to discontinue an old product, place legacy subscribers into storage mode and try to lure customers into subscribing to a newer product.

Remember that these exceptions are reasons to reject individual applications from your technology suite—not an endorsement of a widespread best-of-breed selection process. When considering exceptions, in addition to being wary of customer requirements, watch out for exceptions that may prevent an intact technology suite's adoption.

Once a technology is selected, follow the natural order of the rollout to accomplish the merger of systems. Get everyone communicating about how to operate the new system via voice mail, e-mail, groupware and scheduling software. Allow automatic access to corporate data so that applications can enhance financial consolidation and other mandatory reporting requirements only after having provided access for people via a corporate intranet. The final stage of a rollout blends business processes. After the new organization is populated, the move to a common technology suite is completed.

Management Style

CIOs who have survived mergers advise colleagues to allocate resources to the most difficult tasks, such as merging applications that involve business rules or management preferences (see "Degree of Difficulty," Page 63). In other words, pick your most important fights carefully. They also recommend avoiding being distracted by desktop exceptions because desktop decisions are complicated by a swamp of pirated software, games and umpteen different mail clients. Despite departmental pleas, successful CIOs vigorously impose unified desktop standards to move on and get about the business of managing the newly combined enterprise's systems.

Communication and incentives are your most powerful tools, so it makes sense to overcommunicate with end users to dispel uncertainty. A compelling vision for the new IT organization is the best weapon against fear and rumor. Build a strategy to augment a merger that uses e-mail, voice mail, Web sites, face-to-face meetings, newsletters—the more vehicles, the better. But it's not enough merely to talk. To lock key talent in place in this booming market for IT skills, slap golden handcuffs on both medium and high performers that sweeten salary, benefits and responsibilities.

Remember, too, that investment bankers aren't basing much of their "synergy-related" merger valuation premiums on IS savings. Although a 19 percent IT savings rate is significant, the impact of IT savings on a merger's overall value isn't usually a primary consideration, since IT costs are a single-digit percentage line item for most companies. On the other hand, these same investment bankers overlook the potential for IT-related mismatches to undermine the value of business combinations. The message for CIOs whose companies are contemplating merging with or acquiring another company is clear: One way or another, make sure someone isn't underestimating the IS-related issues of a potential merger or acquisition.

And what's in it for you? As one CIO said, "The reward for a successful merger is that some fine day you get to do it again."

Bob Chatham, senior analyst in Leadership Strategies at Forrester Research Inc., can be reached at Bob_Chatham@forrester.com.

record setting

AS/400e series now supports 10,000 Lotus Domino users with unparalleled reliability.*

Six months ago many said it couldn't be done. But we did it. AS/400e now supports over 10,000 users on a single server, with only one copy of Lotus Domino. So whether you need to support 10 or 10,000 users, the best choice for an easy to use, reliable system is the AS/400e business server. Visit our interactive Domino Advisor at www.as400.ibm.com/domino2 for your customized business solution.

IBM®

Solutions for a small planet®

**Based on lab tests of over 10,000 simulated mail users running error-free on AS/400e system 650-2243 using a single copy of Lotus Domino. Actual customer results may vary. IBM, the IBM logo, Solutions for a small planet, and AS/400e are trademarks or registered trademarks of International Business Machines Corporation in the U.S. and/or other countries. Lotus and Domino are trademarks or registered trademarks of Lotus Development Corporation. © 1998 IBM Corporation.*

Emerging Technology

THE STATE OF THE ART, NEW PRODUCTS AND STAYING AHEAD OF THE CURVE

Edited by Howard Baldwin

Can You Be Trusted?

Visitors to your Web site will expect you to adhere to these future privacy standards

BY JENNIFER BRESNAHAN

BUSINESSES THAT SET UP STAKES ON the Internet are in danger of being burned at them. Their intentions were harmless enough—they merely wanted to use the Web to learn more about their customers so that they could tailor their offerings and maximize service levels and profitability. But somewhere along the way, Web merchants became too effective at this aim and now the repercussions of their intrusive marketing efforts have come back to scorch them.

If industry doesn't take measures to placate consumers and curb online privacy infringements, the government has vowed to pass potentially prohibitive regulations. Already, companies must consider the European Community Directive on Data Protection, which, as of October 1998, will require much stricter data protection standards of any company doing business within the European border—and what company can guarantee that no European will access its Web site? Ultimately, if industry doesn't adopt privacy standards, consumers could take matters into their own hands and stop making online transactions or prevent companies from profiting from their data. The electronic commerce industry stands to miss out on as much as $6 billion in consumer revenue by 2000 if this comes to pass, according to nonprofit standards organization Truste.

"I believe that anyone who says privacy is not an issue is significantly misreading consumer perceptions," says Jeffrey F. Rayport, associate professor at Harvard Business School. "Just look at the energy behind the consumer backlash when AOL announced last year that it planned to sell the phone numbers of its millions of users.... There is widespread recognition that companies already know too much about consumers, and that issue is not going away."

IN THIS SECTION

Indexing Images
Savvy Support
Web Backup
Tracking Assets

The Web community is developing several self-regulatory measures to hold these converging forces at bay. In the confusing morass of acronyms, however, it's difficult to understand the distinctions between the various proposals. The following three main approaches to privacy protection work both independently of or in conjunction with the others.

Innocence by Association

The most obvious approach that companies take is to develop policies that limit what they do with consumer data and then post them online for consumers to read. The sticking point for companies here is convincing consumers they mean what they say. In 1997 Firefly Network Inc., a Cambridge, Mass.-based vendor of software that creates personalized online communities, was the first

ILLUSTRATIONS BY CHRIS LENSCH

company to realize "it's better to have an audited privacy policy than just a privacy policy," says Saul Klein, Firefly's senior vice president of corporate strategy and brand. Firefly commissioned Coopers & Lybrand LLP to conduct a privacy audit of Firefly's site to verify that its practices are as good as its word. "The Web doesn't work unless people feel comfortable sharing information with others," says Klein. (See "The Business Case for Privacy," *CIO* Section 2, Page 54.)

Since then, several organizations have formed with the sole objective of validating companies' privacy claims. The most well known is Truste, an independent nonprofit organization spun out of efforts in 1996 by nonprofit civil liberties organization Electronic Frontier Foundation (EFF) and electronic commerce industry consortium CommerceNet. The way Truste works: Companies pay between $500 and $5,000, depending on their size and the sensitivity of their information, to license a Truste logo, or "trustmark," on their Web sites.

The logo signifies that the company meets Truste's privacy requirements of disclosure and honesty. Consumers click on the Truste logo to read the company's policies and then decide whether to disclose personal information. To assure that sites are complying, Coopers & Lybrand and KPMG Peat Marwick LLP periodically review all member sites. Should Truste find that a company is breaking its word, it will prosecute. "I almost hope someone does break our rules, so we can go after them because that's what we're set up to do," says Esther Dyson, chairman of the EFF and editor of *Release 1.0*, a monthly newsletter about emerging information technology.

Proponents of Truste claim that if even 10 percent of online retail sites adopt it, the higher number of transactions alone could add another quarter of a billion dollars to electronic commerce this year. But this approach also has its limitations. Just because a site displays the Truste logo, it doesn't necessarily treat consumer data in a respectful, ethical manner. As long as a company adheres to its stated security policy, it can sell people's Social Security numbers and medical histories to the highest bidder.

Keeping Track of Audio, Video and Even Virtual Reality

The bugaboo of filing images and multimedia could soon be banished

PICTURE THIS: DIGITAL CAMERA output, sound files, animated GIFs for your Web site, all dumped onto a server that looks like the digital equivalent of Fibber McGee's closet. (For those of you too young to remember, Fibber McGee was a radio character whose closet was such a morass that when he opened it, everything would tumble out with a tumultuous clatter.)

The rise of multimedia has triggered a big problem—keeping track of it all. Finding the right image can be as tedious as flipping through vaguely labeled 35mm slides. And we're not just talking about your last vacation—we're talking about finding the video of your CEO at the most recent stockholder's meeting, now being requested by CBS News; the virtual reality walk-through of your office building, now that you're planning to sue the architect; or even the schematics from the last 10,000 widgets your company manufactured.

In an unusual technological convergence, two new companies are tackling this same problem, generally known as media asset management. In both cases, the companies claim to have created unique algorithms in order to automatically index and categorize images, whether in video, audio or other multimedia format. Also, users can access the index through Web browsers.

Virage Inc. (*www.virage.com*), based in San Mateo, Calif., started shipping Media Management System at the end of last year. It consists of two pieces: Video Cataloger and Media Manager & Browser. The former acts as an automatic logging system, "watching" the multimedia and creating an index based on time coding, storyboard content and even closed-caption text. Media Manager provides Web-based access to the index. Based on configuration, the system starts at $50,000.

INDEXING IMAGES

Magnifi Inc. (*www.magnifi.com*), based in Cupertino, Calif., recently began shipping its Magnifi Enterprise Server 2.0. Its components perform similar tasks, identifying media types in unstructured data within an enterprise and indexing them for access across the Web. Based on configuration, the Magnifi system starts at $20,000, although the company estimates that the price for an average-size company will be roughly $40,000, based on the number of media formats stored and the number of users.

The primary differentiation between the two: While both let users access information stored in object databases, only Virage lets users access information stored in relational databases from Oracle Corp. and Informix Software Inc. as well. The Magnifi solution runs on a Windows NT server and accesses only the information stored in the company database.

For a CIO interested in cataloguing a growing trove of multimedia files, these packages provide a much simpler way of keeping track. Conceivably, you could also use these applications to help you find that old recording of Fibber McGee opening his closet. *–Howard Baldwin*

Emerging Technology

This could prove problematic for consumers who assume that the Truste logo automatically indicates ethical privacy standards and don't click on the label to read the company's actual policies. More realistically, Truste is most effective when it's just one component of an overall data protection plan.

Incremental Information: P3P

Another way of dealing with privacy infringements is to build in technological safeguards against such infringements. Cambridge, Mass.-based World Wide Web Consortium (W3C), an international industry consortium founded in 1994 to develop common protocols for the evolution of the World Wide Web, is developing the Platform for Privacy Preferences Project (P3P) communications protocol as a solution.

Future software implementations of the P3P protocol will allow users to express their privacy practices and preferences. Users will be able to state and store their preferences along with basic demographic data on their client systems, saving them from having to reenter the information multiple times when registering at Web sites. One user's profile, for example, might indicate that she doesn't mind if a site knows her e-mail address, but she wants to be asked if it wants to know her hobbies, while another user might forbid any use of his data whatsoever. As long as future users visit sites that adhere to their personal privacy preferences, they will be able to access them seamlessly. But if the site wants to gather more information than users are willing to divulge, pop-up menus will alert them and provide them with the option of exiting or choosing a lower level of privacy.

The Security Factor: OPS

While implementations of P3P will allow users to control their profile information and reach an explicit understanding about a site's data privacy practices, Open Profiling Standard (OPS) will enable the transport of this data within a privacy framework. In other words, OPS is a technical specification for the exchange of information between user and company. For example, if an online music store learns that a user enjoys jazz, OPS protects that information from inclusion in the P3P profile. That user will not inadvertently find herself on a mailing list of like-minded individuals. OPS, also under review by the same W3C working group that is working on P3P, will be incorporated into the final version of the protocol, says Klein. OPS was originally proposed in 1997 by Firefly, Netscape Communications Corp. and Verisign Inc.

Some privacy advocates criticize OPS because it enables companies to routinely and easily collect

Tech Support Brain Trusts

EVERY COMPANY WANTS TO PUT its best face forward when a customer calls with questions or problems. Yet the unfortunate reality is that most companies don't have the employee resources to do so. It takes 9 months to train customer support representatives, who then stay an average of 14 months, according to research by Meta Group Inc. cited by the Molloy Group Inc. in Parsippany, N.J. But the Molloy Group's **Knowledge Bridge** customer support software is designed so that whoever answers the phone can easily solve the problem.

Knowledge Bridge's goal is to increase the productivity of call center operations and customer satisfaction by enabling staff to capture and leverage their knowledge across the enterprise. Using a hybrid of several self-organizing knowledge processing techniques, including neural networks and fuzzy logic, Knowledge Bridge continuously learns from users' experiences. A call center operator simply types the description of a customer's problem, and the Bridge lists the diagnosis and likely remedies. Every time the computer successfully delivers an answer to a query, it stores in its memory the steps it used to get there, thus learning to recognize different questions and answer them more effectively. Knowledge Bridge can also be used to provide how-to information, product recommendations and configuration, and scripting for telesales and telemarketing.

Knowledge Bridge manages both structured and unstructured data, such as documents, graphics, Web pages and video files. The system can run side by side with most enterprise call management applications, sharing data with those tools through standard APIs. The Knowledge Bridge client runs on PCs running Windows 95 or NT, and the server software runs on Windows NT. Knowledge Bridge connects to any relational database supporting ODBC. The price ranges from $1,500 to $3,500 per user based on the degree of customization and number of users. Contact Molloy Group at 973 540-1212 or visit *www.knowledgebridge.com.*

Virtual Backup

NO ONE WANTS TO BE AWAKENED in the middle of the night to find out that somehow the PowerPoint files the CEO is using for his presentation to the Singapore Trade Council have been corrupted. Perhaps less tragic but no less aggravating would be to find out that one of your salespeople went to Canada with an outdated version of his client's purchasing plans. Apparently the problem was that the backup was done in your time zone, not the client's. To better serve your mobile professionals, it might be time to consider Web-based virtual backup service from Seattle-based **Atrieva Corp.** as an adjunct to your corporation's existing backup system.

Atrieva's service is primarily aimed at individual business users, includ-

ing corporate mobile professionals. When users sign up for the Atrieva service through its Web site, they can download its software to their PCs and register a password of their choice and an encryption key for secure access. The software scans users' files, encrypts and compresses them and uploads them to Atrieva's servers, where they are stored and also copied twice to tape. If a file gets corrupted when users are on the road, they can access Atrieva's Web site, enter their passwords and download the files they need. In more horrific circumstances, such as an entire hard-drive crash, a user could also rent or borrow a PC equipped with a Web browser and download the files.

Atrieva's service costs $14.95 per month for unlimited storage and unlimited access, including 24-hour technical support. Its software runs on Internet-enabled PCs running Windows 95 or Windows NT 4.0. Contact Atrieva at 206 654-5300 or visit *www.atrieva.com.*

Managing IT's Assets

NOBODY KNOWS BETTER THAN A CIO how much of a headache it is to keep track of information technology assets. Figuring out total cost of ownership, return on investment and cost accounting is no picnic. To that end, **IT Ledger** from NetBalance Inc. (formerly NetSolv), in Gaithersburg, Md., is designed to keep track of purchasing, financing, deployment, maintenance, downtime, human resources and disposal costs of your technology in a single decision-support package.

IT Ledger consists of five modules: A set of agents capture life-cycle costs from existing sources such as corporate financial applications and asset-inventory tools; a Java-based tool for capturing staff activity costs such as system configuration or hardware installation; an asset inventory and management application; an asset data repository; and a set of analysis and reporting tools. By continuously tracking all asset cost events in conjunction with each other, these tools are designed to reduce costs, enhance utilization of resources and enable IT staff to better manage outsourcing and departmental chargebacks.

IT Ledger's client software works on PCs running Windows 95 or Windows NT, while its server software works on servers running Windows NT only. The asset data repository requires an Oracle Corp. or Microsoft Corp. SQL Server database running on any platform. Pricing for IT Ledger starts at $40,000 for a three-user license capable of monitoring up to 1,000 desktops. Contact NetBalance at 301 948-8506 or visit *www.netbalance.com.*

personal information. In that way, it's similar to the notorious cookie software that resides on a consumer's computer and collects data without his knowing it. But the difference, argues Dyson, is that P3P/OPS profiles are perfectly accessible and intelligible to consumers. Users have complete control over the information in their profiles. They can make it as accurate and complete—or incomplete—as they wish. Further, consumers can use OPS to track all of their transactions and what promises were made and broken by merchants. This feature should increase consumers' comfort levels about conducting online business because they can identify unethical behavior and hold the offending company accountable.

What Will Your Customers Reveal?

OPS, Truste and P3P are intended to enhance consumer privacy, but the companies backing them are betting that these technical tools will also help them get to know their customers better. The theory is that people will actually be more willing to reveal personal information if they know exactly what it is being used for. And the figures bear this out.

According to a 1997 Truste survey conducted by Louis Harris & Associates Inc. and Columbia University professor Alan F. Westin, of the 58 percent of the 1,009 users polled who have been asked to provide information at a Web site, 79 percent declined and 8 percent supplied false information. But 71 percent of those who declined or gave false information said they would've supplied requested information if they'd had a relationship with the company, and 63 percent also said they would have divulged information if the site had disclosed clearly how the information would be used. In addition, consumers will also be more willing to reveal personal information if they get some value in exchange for it, says Rayport. For instance, a user might be willing to let companies know her favorite books if it meant she could receive recommendations from an aggregated data source.

"It's paramount for any company moving into personalization technology to fulfill the promise it has made with its customer," says Susan Boster, director of marketing strategy and communication at BarnesandNoble.com, the online subsidiary of book retailer Barnes & Noble Inc., that plans to utilize both OPS and Truste. "Once we've got the privacy and trust established...then we as booksellers can give our customers the kind of customized experience similar to when a person walks into his neighborhood Barnes & Noble and the bookseller knows him by name." CIO

Senior Writer Jennifer Bresnahan can be reached at jbresnahan@cio.com.

ILLUSTRATION LEFT BY GUY LE DELEY / SIS; PHOTO RIGHT BY VITO ALUIA

INDEX

Page numbers refer to the first page of the article(s) in which the company is mentioned. This index is provided as a service to readers. The publisher does not assume any liability for errors or omissions.

Company Index

3Com Corp. ... 54
Aberdeen Group ... 54
Amdahl Corp. ... 54
Atrieva Corp. ... 66
AT&T Corp. ... 54
Axent Technologies Inc. ... 72
Azmy Thinkware Inc. ... 66
Barnes & Noble Inc. ... 66
Bay Networks Inc. ... 54
Boundless Technologies Inc. ... 34
Bristol-Myers Squibb Co. ... 16
British Telecommunications PLC ... 54
BRSS Coaching and Consulting Inc. ... 16
Chevron Federal Credit Union ... 34
CIMI Corp. ... 54
Cisco Systems Inc. ... 54
Citrix Systems Inc. ... 34
Coalition for Healthier Cities and Communities, The ... 16
CommerceNet ... 66
Compaq Computer Corp. ... 72
Computer Associates International Inc. ... 72
Concours Group, The ... 34
Coopers & Lybrand LLP ... 66
DataTrend Inc. ... 16
Davidson Aluminum & Metal Corp. ... 34
Deutsche Telekom ... 54
Digital Tech Frontier LLC ... 16
Electronic Data Systems Corp. ... 54
Electronic Frontier Foundation ... 66
Elf Atochem North America Inc. ... 54
Enchanted E-Books ... 16
Equant Network Services ... 54
Ernst & Young International Ltd. ... 54
Federal Express Corp. ... 16
Fidelity Investments ... 16
Firefly Network Inc. ... 66
First American Railways Inc. ... 16
First Union National Bank ... 34
Fort Point Partners Inc. ... 16
France Telecom ... 54
Future Shop Ltd. ... 34
Gartner Group Inc. ... 34, 54
General Electric Capital Services ... 54
Genstar Container Corp. ... 54
Hewlett-Packard Co. ... 16, 54, 72
Hills Department Stores Inc. ... 16
IBM Corp. ... 34, 54, 72
Informix Software Inc. ... 16, 66
Intel Corp. ... 16
J.P. Morgan & Co. Inc. ... 54
Korn/Ferry International ... 28
KPMG Peat Marwick LLP ... 66
Louis Harris & Associates Inc. ... 66
Lucent Technologies Inc. ... 46
Lyondell Petrochemical Co. ... 54
Magnifi Inc. ... 66
MCI Communications Corp. ... 54
Microsoft Corp. ... 34, 72
Molloy Group Inc. ... 66
NationsBank Corp. ... 46
NetBalance Inc. ... 66
Netcom On-Line Communications Services Inc. ... 54
Netscape Communications Corp. ... 16, 66
Northeast Utilities Electrical System ... 54
Northern Telecom ... 54
Norweb Communications ... 54
Novell Inc. ... 72
OppenheimerFunds Inc. ... 72
Oracle Corp. ... 34, 66
Pacific Bell ... 54
PeopleSoft Inc. ... 28
Pleasant Co. ... 16
PSINet Inc. ... 54
Reader's Digest Association Inc., The ... 28
Sarnoff Corp. ... 46
Sears, Roebuck and Co. ... 34
Southwestern Bell ... 54
Sprint Communications Co. LP ... 54
Sun Microsystems Inc. ... 34
TeleChoice Inc. ... 54
Textron Inc. ... 54
Truste ... 66
UMB Bank ... 54
United Services Automobile Association (USAA) ... 34
United Utilities PLC ... 54
Verisign Inc. ... 66
Virage Inc. ... 66
Visual Decisions Inc. ... 46
World Wide Web Consortium ... 66
WorldCom Inc. ... 54
Xerox Corp. ... 28
Yankee Group, The ... 34

Advertiser Index

**Denotes Section 2 Advertisers*

3Com Corp. ... 36
Acxiom Corp. ... 3*
Advanced IT Solutions '98 ... 69*
Amdahl Corp. ... 25
Attachmate Corp. ... 19*
BMC Software ... 41*
Cabletron Systems Inc. ... 71*
CAP Gemini America Inc. ... 71
CCD Online Systems Inc. ... 15*
CIO Communications Inc. ... 17, 72A*
Cisco Systems Inc. ... 27*
Command Systems ... 61*
Computer Associates International Inc. ... C4, C4*, 3
Computer Museum ... 67*
Compuware Corp. ... 20
Dell Computer Corp. ... C2
Deloitte & Touche ... 15
Exabyte Corp. ... 11*
Exide Electronics ... 43
Fujifilm ... 57*
Gateway 2000 Inc. ... 8
Hewlett-Packard Co. ... 4
IBM Corp. ... 21*, 31, 65
ICE ... 73*
Information Builders Inc. ... 7*
Intel Corp. ... 16A
JBA ... 44
JD Edwards & Co. ... 43*
Kingston Technology ... 12*
Kronos Inc. ... 23
LCI International ... 59
Lucent Technologies Inc. ... 9*
Microsoft Corp. ... 11, 52
MKS Inc. ... C3
Modis ... 59*
Network Associates ... 22*, 60
Novell Inc. ... 26, 44*
NuVision Technologies ... 63*
Object Management Group ... 65*
Oracle Corp. ... 7
PeopleSoft Inc. ... C2*
Quantum Corp. ... 29
SAS Institute Inc. ... 19
Secure Computing Corp. ... 17*
Sequent Computer Systems ... 53*
Shared Medical Systems ... 39*
Silicon Graphics Inc. ... C2 Flap*, 4*
Sprint Communications Co. LP ... 33
Storagetek ... 29*
Sun Microsystems Inc. ... 41, 51
Sybase Inc. ... 51*
Tibco ... 36*
Walker ... C3*
Xerox Corp. ... 31*, 33*

CIO is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 275 computer publications in over 75 countries. Sixty million people read one or more International Data Group publications each month. International Data Group's publications include: **Argentina:** Buyer's Guide, Computerworld Argentina, PC World Argentina; **Australia:** Australian Macworld, Australian PC World, Australian Reseller News, Computerworld, IT Casebook, Network World, Publish, Webmaster; **Austria:** Computerwelt Osterreich, Networks Austria, PC Tip Austria; **Bangladesh:** PC World Bangladesh; **Belarus:** PC World Belarus; **Belgium:** Data News; **Brazil:** Annuário de Informática, Computerworld, Connections, Macworld, PC Player, PC World, Publish, Reseller News, Supergamepower; **Bulgaria:** Computerworld Bulgaria, Network World Bulgaria, PC & MacWorld Bulgaria; **Canada:** CIO Canada, Client/Server World, ComputerWorld Canada, InfoWorld Canada, NetworkWorld Canada, WebWorld; **Chile:** Computerworld Chile, PC World Chile; **Colombia:** Computerworld Colombia, PC World Colombia; **Costa Rica:** PC World Centro America; **The Czech and Slovak Republics:** Computerworld Czechoslovakia, Macworld Czech Republic, PC World Czechoslovakia; **Denmark:** Communications World Danmark, Computerworld Danmark, Macworld Danmark, PC World Danmark, Techworld Denmark; **Dominican Republic:** PC World Republica Dominicana; **Ecuador:** PC World Ecuador; **Egypt:** Computerworld Middle East, PC World Middle East; **El Salvador:** PC World Centro America; **Finland:** MikroPC, Tietoverkko, Tietoviikko; **France:** Distributique, Hebdo, Info PC, Le Monde Informatique, Macworld, Reseaux & Telecoms, WebMaster France; **Germany:** Computer Partner, Computerwoche, Computerwoche Extra, Computerwoche FOCUS, Global Online, Macwelt, PC Welt; **Greece:** Amiga Computing, GamePro Greece, Multimedia World; **Guatemala:** PC World Centro America; **Honduras:** PC World Centro America; **Hong Kong:** Computerworld Hong Kong, PC World Hong Kong, Publish in Asia; **Hungary:** ABCD CD-ROM, Computerworld Szamitastechnika, Internetto Online Magazine, PC World Hungary, PC-X Magazin Hungary; **Iceland:** Tolvuheimur PC World Island; **India:** Information Communications World, Information Systems Computerworld, PC World India, Publish in Asia; **Indonesia:** InfoKomputer PC World, Komputek Computerworld, Publish in Asia; **Ireland:** ComputerScope, PC Live!; **Israel:** Macworld Israel, People & Computers/Computerworld; **Italy:** Computerworld Italia, Macworld Italia, Networking Italia, PC World Italia; **Japan:** DTP World, Macworld Japan, Nikkei Personal Computing, OS/2 World Japan, SunWorld Japan, Windows NT World, Windows World Japan; **Kenya:** PC World East African; **Korea:** Hi-Tech Information, Macworld Korea, PC World Korea; **Macedonia:** PC World Macedonia; **Malaysia:** Computerworld Malaysia, PC World Malaysia, Publish in Asia; **Malta:** PC World Malta; **Mexico:** Computerworld Mexico, PC World Mexico; **Myanmar:** PC World Myanmar; **Netherlands:** Computer! Totaal, LAN Internetworking Magazine, LAN World Buyers Guide, Net, Macworld Netherlands, WebWereld; **New Zealand:** Absolute Beginners Guide and Plain & Simple Series, Computer Buyer, Computer Industry Directory, Computerworld New Zealand, MTB, Network World, PC World New Zealand; **Nicaragua:** PC World Centro America; **Norway:** Computerworld Norge, CW Rapport, Datamagasinet, Financial Rapport, Kursguide Norge, Macworld Norge, Multimediaworld World Norway, PC World Ekspress Norge, PC World Nettverk, PC World Norge, PC World ProduktGuide Norge; **Pakistan:** Computerworld Pakistan; **Panama:** PC World Panama; **People's Republic of China:** China Computer Users, China Computerworld, China InfoWorld, China Telecom World Weekly, Computer & Communication, Electronic Design China, Electronics Today, Electronics Weekly, Game Software, PC World China, Popular Computer Week, Software Weekly, Software World, Telecom World; **Peru:** Computerworld Peru, PC World Profesional Peru, PC World SoHo Peru; **Philippines:** Click!, Computerworld Philippines, PC World Philippines, Publish in Asia; **Poland:** Computerworld Poland, Computerworld Special Report Poland, Cyber, Macworld Poland, Networld Poland, PC World Komputer; **Portugal:** Cerebro/PC World, Computerworld/Correio Informático, Dealer World Portugal, Mac*In/PC*In Portugal, Multimedia World; **Puerto Rico:** PC World Puerto Rico; **Romania:** Computerworld Romania, PC World Romania, Telecom Romania; **Russia:** Computerworld Russia, Mir PK, Publish, Seti; **Singapore:** Computerworld Singapore, PC World Singapore, Publish in Asia; **Slovenia:** Monitor; **South Africa:** Computing SA, Network World SA, Software World SA; **Spain:** Communicaciones World España, Computerworld España, Dealer World España, Macworld España, PC World España; **Sri Lanka:** Infolink PC World; **Sweden:** CAP&Design, Computer Sweden, Corporate Computing Sweden, Internetworld Sweden, it.branschen, Macworld Sweden, MaxiData Sweden, MikroDatorn, Nätverk & Kommunikation, PC World Sweden, PC/Aktiv, Windows World Sweden; **Switzerland:** Computerworld Schweiz, Macworld Schweiz, PCtip; **Taiwan:** Computerworld Taiwan, Macworld Taiwan, NEW ViSiON/Publish, PC World Taiwan, Windows World Taiwan; **Thailand:** Publish in Asia, Thai Computerworld; **Turkey:** Computerworld Turkiye, Macworld Turkiye, Network World Turkiye, PC World Turkiye; **Ukraine:** Computerworld Kiev, Multimedia World Ukraine, PC World Ukraine; **United Kingdom:** Acorn User UK, Amiga Action UK, Amiga Computing UK, Apple Talk UK, Computing, Macworld, Parents and Computers UK, PC Advisor, PC Home, PSX Pro, The WEB; **United States:** Cable in the Classroom, CIO Magazine, Computerworld, DOS World, Federal Computer Week, GamePro Magazine, InfoWorld, I-Way, Macworld, Network World, PC Games, PC World, Publish, Video Event, and THE WEB Magazine; online webzines JavaWorld, NetscapeWorld, and SunWorld Online; **Uruguay:** InfoWorld Uruguay; **Venezuela:** Computerworld Venezuela, PC World Venezuela; and **Vietnam:** PC World Vietnam.

Editorial, Advertising and Business Offices: 492 Old Connecticut Path, P.O. Box 9208, Framingham, Massachusetts 01701-9208, (508) 872-0080. **Postal Information:** CIO (ISSN 0894-9301) is published in two sections, semimonthly; and as a combined issue December 15/January 1 by CIO Communications Inc., 492 Old Connecticut Path, P.O. Box 9208, Framingham, Massachusetts 01701-9208. Periodicals postage paid at Framingham, MA, and at additional mailing offices. **Reprints:** Copyright 1998 by CIO Communications Inc. All rights reserved. Reproduction of material appearing in CIO is forbidden without written permission. Send all reprint requests to Permissions Department, CIO, 492 Old Connecticut Path, P.O. Box 9208, Framingham, Massachusetts 01701-9208. **Photocopy Rights:** Permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by CIO for users through the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress Street, Salem, Massachusetts 01970. Please specify: ISSN 0894-9301. Permission to photocopy does not extend to contributed articles followed by this symbol: ‡. **Subscriptions:** Address inquiries to CIO, 492 Old Connecticut Path, P.O. Box 9208, Framingham, Massachusetts 01701-9208; 800 788-4605. CIO is free to qualified information executives. To all others the one-year basic rate is $89 for U.S. and Canada, $125 to foreign countries (payable in U.S. funds only). The single copy price is $8. Please allow 4 to 6 weeks for new subscriptions to begin. **Change of Address:** Please fax a copy of current subscription label along with new address to (508) 879-7899. Allow 4 to 6 weeks for change to take effect. **Postmaster:** Send change of address to CIO, P.O. Box 489, Northbrook, Illinois 60065-9816.

Spec your Y2K code with Cap Gemini America, and we'll ship it back renovated in just four weeks.*

Year 2000 renovation is a punishing task—especially when you're peeling open one program at a time.

Save your developers that duty by calling Cap Gemini America today. Our Application Renovation Center^{sm} can provide 100% Year 2000 renovations from specification to delivery in four weeks, guaranteed.* Our automated renovation approach provides rapid, large-scale renovations to spec, leaving your developers free for more important development priorities or to conduct testing.

Cap Gemini America's ARC*drive*^{sm} has already helped more than 300 businesses worldwide address Year 2000 problems on over 3 billion lines of code. And we can do the same for you.

Contact us for more complete details on our renovation offers or to learn more about the ARC^{sm}, as well as Cap Gemini America's testing services, factory licenses, and program management offices.

We can help you put the Year 2000 behind you.

And that's no small potatoes.

FREE 48-HOUR QUOTE on standard renovation groups.

4-WEEK TURNAROUND from spec to delivery.

100% GUARANTEE with extended warranties available.

FREE TESTING VIDEO created by Computer Channel, while supplies last.

1-888-Y2KTODAY

CAP GEMINI

www.usa.capgemini.com/y2k

Cap Gemini America, Inc., TransMillennium™ Services, 1114 Avenue of the Americas, 29th Floor, New York, NY 10036

* The four-week offer and 100% guarantee apply to standard renovation groups consisting of MVS COBOL code from 750,000 to 2 million lines renovated to specification.

Working Smart

MAXIMIZING THE PAYOFF FROM I.T.

OppenheimerFunds' Client/Server-Based Security Application

Vital Statistics:

- **Organization:** OppenheimerFunds Inc., New York City
- **Application:** Client/server-based security
- **Technologies:** IBM Corp. 3090 mainframe; various Unix, Novell Inc. and Microsoft Corp. Windows NT-based servers; Hewlett-Packard Co. and Compaq Computer Corp. workstations; Axent Technologies Inc.'s OmniGuard suite of security applications; Computer Associates International Inc.'s CA-Top Secret for mainframe security; native security for Windows NT and Novell servers
- **Scope:** 2,000 portfolio managers, traders, salespeople, accountants, customer service reps and administrators
- **Sponsors:** Eric Larson, CIO and senior vice president; Jim Patterson, vice president of security and telecommunications
- **Objective:** Ensure and maintain security after the implementation of a client/server-based architecture
- **Payoff:** Enables growth by preventing fraud; allows geographically dispersed employees to securely access information; supports a tripling of assets under management

“ONE HUNDRED BILLION and better.”

By the year 2000, if not sooner, OppenheimerFunds aims to increase its asset management portfolio to that impressive dollar amount, up from the current base of roughly $80 billion. In 1994, when President and CEO Bridget A. Macaskill set OppenheimerFunds' sights on that goal, CIO and Senior Vice President Eric Larson knew no such growth could happen without a major infusion of distributed information technology. At the time, the New York City-based mutual fund firm managed $27 billion in assets. Reaching the $100 billion mark would require an IT infrastructure that went beyond the IBM mainframe, several Novell PC servers and two Unix servers that comprised the heart of OppenheimerFunds' IT environment.

To support such expansion, first the company had to pull ahead of the competition technologically, and it had to use the newly implemented IT to find different ways of doing business. Larson's plan called for powerful databases and full, remote access for 2,000 employees dispersed nationwide. He also envisioned providing employees with Internet access to enable electronic commerce. For all that to happen, OppenheimerFunds' IT budget would have to increase, from $10 million to its current $45 million.

Larson got the green light for his initiatives in 1995. But implementing distributed systems created a new concern. With the mainframe and small server systems the company previously relied on, fraudulent purchases—or whatever else a mischief-maker could cook up—were tough to perpetrate. While the distributed environment would help usher in a new phase of growth, it would also bring a slew of vulnerabilities.

To deal with those vulnerabilities, Larson hired an expert in security by the name of Jim Patterson who in turn brought on board a team of security staffers. “Our intention was to move fast,” Larson recalls. “If security didn't keep up with our overall computing expansion, we'd be seriously slowed up.”

To date, Patterson, vice president of security and telecommunications, has concentrated his efforts on applying existing security policies such as access-authorization parameters and password-expiration time frames to client/server-based systems. “With client/server, there are more opportunities for bad things to happen than there are on a mainframe,” Patterson explains. “When you open up [an infrastructure] to include things like Internet access, [those kinds of] opportunities are increased exponentially.”

To ensure compliance with security policies, Patterson turned to technology. His team installed OmniGuard, a suite of security tools from Axent Technologies. The staff customized OmniGuard to check servers' compliance with security policies, search for intrusions and breaches, create automated responses to such activities and test users' password selections for penetrability. The team has also conducted comprehensive and security-awareness training sessions for employees.

The new infrastructure is already paying off for OppenheimerFunds. “Last fall when Wall Street went nuts, we had portfolio managers getting up at all hours of the night, accessing their accounts from wherever they happened to be,” says Larson. “That was a key example of doing business in new ways, of providing better service to customers and third-party brokers and dealers. We're able to do things like that because we're confident that the people accessing our system are who they say they are.”

As a result, OppenheimerFunds is in a position to meet its goals. “Hopefully these new capabilities will allow us to compete at the top tier of the business we're in,” Larson says. “If so, it's going to be easy to exceed a hundred billion [dollars] by the end of the decade.”

–David Pearson

Send Working Smart ideas to Associate Editor Megan Santosus at santosus@cio.com.

Our Customers Choose To Work With integrity

Ross Holman, CIO of PageNet, relies on MKS to ensure corporate Intranet and software development integrity.

His IT professionals use MKS's award-winning software configuration management (SCM) technology to manage team software development. With MKS as a business partner, PageNet builds reliable software faster and better than ever before, meeting the demanding needs of more than ten million pager users. And to manage the Intranet, MKS is also there for PageNet with Web Integrity.

MKS products and services manage the collaborative development of software and information. Our name and our software are critically acclaimed, and endorsed by industry partners: IBM, Netscape, Microsoft, Powersoft, and others.

Mission critical software drives global corporations like PageNet. And MKS brings integrity to software for client/server and the Web. Let us deliver integrity for your IT systems.

To learn more about MKS, our products and our services, point your browser at http://www.mks.com or call us at 1-800-265-2797.

mks

Managing Change with Integrity

MKS 1-519-884-2251
UK +44 181 335 5920
Germany +49 711 16714 0
France +331 3082 2762
Scandic +45 3325 6555

"As the world's largest wireless messaging company, it is imperative that our IT operations run with clockwork precision. The software running our customer billing, pager activation and finance processes is mission critical. To ensure our software development integrity, we turned to MKS's software configuration management solution. Now, with our development house in order, we're tackling the same challenge on the Web, and again, MKS is there to help."

Ross Holman — CIO — PageNet

MKS, MKS logo, Managing Change with Integrity and Web Integrity are trademarks of Mortice Kern Systems Inc. All other trademarks acknowledged. ©1997.

INFORMIX DATABLADE PARTNER

NETSCAPE Alliance DEVELOPMENT PARTNER

OPEN SOLUTIONS CODE PARTNER POWERSOFT

IBM

HEWLETT PACKARD

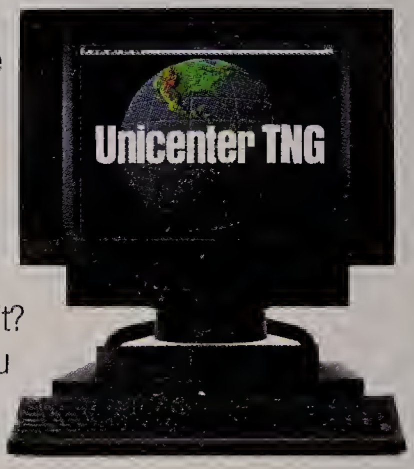
Microsoft Enterprise Development Partner

Your Choice.

Features	Unicenter	IBM/Tivoli TME 10
Business Process Views™	✓	
Real World Interface	✓	
Fully Integrated Management Functions	✓	
Fully Integrated Network Management	✓	
Policy-Based Management for All Functions	✓	
Manages Over 30 Platforms	✓	
Also Manages AIX, AS/400, OpenVMS, and MVS	✓	
Open and Interoperable	✓	✓
Published APIs for Over 14 Management Functions	✓	
Object-Oriented Enterprise Management Schema	✓	
Intelligent, Autonomous, and Lightweight Agents	✓	
Built-In Security	✓	
Single Sign-On	✓	
Network Security Including the Internet and Intranets	✓	
Monitoring and Event Management	✓	✓
Support for SNMP and HMMP/HMMS Standards	✓	
Virus Protection	✓	
Desktop-to-Host Storage Management	✓	
Software Delivery	✓	✓
Integrated Service Desk	✓	
Workload Management	✓	
Complete Job Flow Process Visualization	✓	
Extensive Web Server Management	✓	
Output Management	✓	
Resource Accounting	✓	
Integrated Support for MVS Management	✓	
Supports DECnet, TCP/IP, SNA, and, IPX/SPX	✓	
Wizards for Easy Customization	✓	

This simple chart only begins to explain the enormous difference between Unicenter® and IBM/Tivoli TME 10.

What clients want today are complete solutions not just software initiatives like SAA, OfficeVision and SystemView. The questions are, do you want to bet your career on IBM's view of the future? Can you afford to wait? And how can you have confidence in a solution that is so IBM-centric and biased?



Those are just a few reasons why thousands of clients prefer Unicenter. It's the industry standard for network and systems management. Today, more than 93% of the Fortune 500 and thousands of small to medium-size businesses trust CA for enterprise management.

Unicentered

Unlike TME 10, Unicenter® TNG™ supports every major hardware platform and operating system. It's open, scalable, extensible, and vendor-neutral. And with Unicenter TNG's powerful new features like advanced agent technology and Real World Interface™, Unicenter TNG is light-years ahead of TME 10.

It's real, it's mission-critical, and it's up and running in thousands of sites around the world.

If that sounds good to you, remember, it's your choice.

Call 1-888-UNICENTER
or visit www.cai.com

COMPUTER® ASSOCIATES
Software superior by design.

Unicenter® TNG™

©1997 Computer Associates International, Inc., Islandia, NY 11788-7000. All other product names referenced herein are trademarks of their respective companies.
Information based on publicly available information as of 3/1/97.

CONGRATULATIONS TO PAST WINNERS OF THE CIO ENTERPRISE VALUE AWARDS

1998

Black & Veatch
New York City Department of Finance
Procter & Gamble
State Street Global Advisors
Tech Data Corp.
U.S. Environmental Protection Agency

1997

Bell Atlantic Corp.
The Chase Manhattan Corp.
Fidelity Investments
MacGregor Medical Association
Schlumberger Ltd.

1996

Brigham & Women's Hospital
Gensym Corp.
McDonnell Douglas Helicopter Systems
Rockwell Space Systems Division (SSD)
Telogy Inc.
United HealthCare Corp.

1995

APCOA Inc.
Commonwealth of Massachusetts
PCs Compleat Inc.
Hyatt Hotels & Resorts
Caterpillar Inc.
Kmart Corp.

1994

SynOptics Communications Inc. (now Bay Networks Inc.)
Complete Health Services Inc.
Los Angeles County Department of Public Social Services
AT&T Universal Card Services Corp.
Chicago Bureau of Parking
South Florida Water Management District

1993

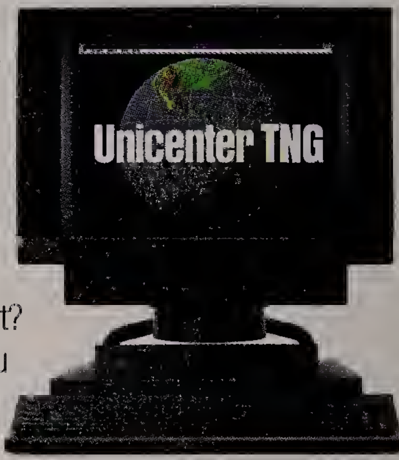
The Perrier Group of America Inc.
New York City Transit Authority
Medical Center of Delaware
Texas Instruments
Lone Star Gas Co.
Travelers Managed Care and Employee Benefits Operations

Your Choice.

Features	Unicenter	IBM/Tivoli TME 10
Business Process Views™	✓	
Real World Interface	✓	
Fully Integrated Management Functions	✓	
Fully Integrated Network Management	✓	
Policy-Based Management for All Functions	✓	
Manages Over 30 Platforms	✓	
Also Manages AIX, AS/400, OpenVMS, and MVS	✓	
Open and Interoperable	✓	✓
Published APIs for Over 14 Management Functions	✓	
Object-Oriented Enterprise Management Schema	✓	
Intelligent, Autonomous, and Lightweight Agents	✓	
Built-In Security	✓	
Single Sign-On	✓	
Network Security Including the Internet and Intranets	✓	
Monitoring and Event Management	✓	✓
Support for SNMP and HMMP/HMMS Standards	✓	
Virus Protection	✓	
Desktop-to-Host Storage Management	✓	
Software Delivery	✓	✓
Integrated Service Desk	✓	
Workload Management	✓	
Complete Job Flow Process Visualization	✓	
Extensive Web Server Management	✓	
Output Management	✓	
Resource Accounting	✓	
Integrated Support for MVS Management	✓	
Supports DECnet, TCP/IP, SNA, and, IPX/SPX	✓	
Wizards for Easy Customization	✓	

This simple chart only begins to explain the enormous difference between Unicenter® and IBM/Tivoli TME 10.

What clients want today are complete solutions not just software initiatives like SAA, OfficeVision and SystemView. The questions are, do you want to bet your career on IBM's view of the future? Can you afford to wait? And how can you have confidence in a solution that is so IBM-centric and biased?



Those are just a few reasons why thousands of clients prefer Unicenter. It's the industry standard for network and systems management. Today, more than 93% of the Fortune 500 and thousands of small to medium-size businesses trust CA for enterprise management.

Unicentered

Unlike TME 10, Unicenter® TNG™ supports every major hardware platform and operating system. It's open, scalable, extensible, and vendor-neutral. And with Unicenter TNG's powerful new features like advanced agent technology and Real World Interface™, Unicenter TNG is light-years ahead of TME 10.

It's real, it's mission-critical, and it's up and running in thousands of sites around the world.

If that sounds good to you, remember, it's your choice.

Call 1-888-UNICENTER
or visit www.cai.com

COMPUTER® ASSOCIATES
Software superior by design.

Unicenter® TNG™

©1997 Computer Associates International, Inc., Islandia, NY 11788-7000. All other product names referenced herein are trademarks of their respective companies.
Information based on publicly available information as of 3/1/97.